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Vol. 1051 Number 2

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UNITED STATES PATENT AND TRADEMARK OFFICE

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February 12, 1985

U.S.
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

February 12, 1985 Volume 1051 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	64.00
Designation fee for 11th and subsequent designations	no charge

GERALD J. MOSSINGHOFF,
Dec. 24, 1984. *Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Feb. 9, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,314,379 through 4,315,333

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,359,119, Re. S.N. 672,106 Filed Nov. 15, 1984, Cl. 180/69.R, SPRING-ASSISTED ELONGATED MASS OVER-CENTER SYSTEM, Steven B. Kammerman, Owner of Record: *New York Development Consultants, Ltd., Bayside, N.Y.*, Attorney or Agent: James. F. Bryan, Ex. Gp.: 316

4,359,726, Re. S.N. 672,139, Filed Nov. 15, 1984, Cl. 340/666, COMPOSITE SHEETS CONSTITUTING ELECTROMECHANICAL TRANSDUCERS AND TRANSDUCERS EQUIPPED WITH SUCH SHEETS, Jacques Lewiner, et al., Owner of Record:

Inventors, Attorney or Agent: Roberts B. Larson, et al., Ex. Gp.: 268

4,437,723, Re. S.N. 665,828, Filed Oct. 29, 1984, Cl. 339/99R, THREE-ROW CONNECTOR FOR MASS TERMINATING FLAT CABLE, Ronald S. Narozny, Owner of Record: *Thomas & Betts Corp., Raritan, N.J.,* Attorney or Agent: Robert M. Rodrick, Ex. Gp.: 322

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 30,035, Reexam. No. 90/000,673, Requested: Nov. 30, 1984, Cl. 198/850, ARTICULATED LINK CONVEYOR, Eldon S. Miller, Owner of Record: *Eldon S. Miller, Tampa, Fla.,* Attorney or Agent: None, Ex. Gp.: 310, Requester: Cidelcem, Paris, France

3,217,256, Reexam. No. 90/000,675, Requested: Nov. 30, 1984, Cl. 455/109, INDEPENDENT SIDEBAND TRANSMISSION SYSTEM, Anthony Palatinus, Owner of Record: *Anthony Palatinus, Glen Cove, N.Y.,* Attorney or Agent: None, Ex. Gp.: 260, Requester: AT&T Technologies, Inc., Berkley Heights, N.J.

3,716,977, Reexam. No. 90/000,710, Requested: Jan. 11, 1985, Cl. 56/202, GRASS CATCHER ASSEMBLY, Harold P. Jackson, Owner of Record: *McDonough Power Equipment, Inc., McDonough, Ga.,* Attorney or Agent: Francis C. Browne, Ex. Gp.: 333, Requester: The Toro Co., Minneapolis, Minn.

3,764,305, Reexam. No. 90/000,706, Requested: Jan. 10, 1985, Cl. 75/130R, METHOD OF STORAGE AND HEAT-RETAINING FOR TREATED NODULAR CAST IRON, Georg Andersson, Owner of Record: *Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden,* Attorney or Agent: Jennings Bailey, Jr., Ex. Gp.: 111, Requester: Ernest F. Marmorek, New York, N.Y.

3,934,421, Reexam. No. 90/000,709, Requested: Jan. 9, 1985, Cl. 405/16, GROUND STABILIZATION MATTING, Berthold H. Daimler, et al., Owner of Record: *Akzona, Inc., Enka, N.C.,* Attorney or Agent: David M. Carter, Ex. Gp.: 350, Requester: Owner

4,268,915, Reexam. No. 90/000,708, Requested: Jan. 9, 1985, Cl. 455/158, UNIVERSAL AUTOMOTIVE ELECTRONIC RADIO WITH DISPLAY FOR TUNING OR TIME INFORMATION, Bernard S. Parmet, Owner of Record: *Motorola, Inc., Chicago, Ill.,* Attorney or Agent: James W. Gillman, Ex. Gp.: 263, Requester: Vynalam Ltd., New York, N.Y.

4,337,805, Reexam. No. 90/000,707, Requested: Jan. 8, 1985, Cl. 141/71, AGRICULTURAL BAG LOADING APPARATUS, William C. Johnson, et al., Owner of Record: *Ag-Bag Corp., Arlington, Nebr.,* Attorney or Agent: Michael A. O'Neil, Ex. Gp.: 240, Requester: Ryco, Inc., Blair, Nebr.

4,379,804, Reexam. No. 90/000,688, Requested: Dec. 17, 1984, Cl. 428/332, LIQUID SORBENT MATERIALS, John F. Eisele, et al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Warren R. Bovee, Ex. Gp.: 154, Requester: Owner

4,381,934, Reexam. No. 90/000,701, Requested: Dec. 31, 1984, Cl. 65/135, GLASS BATCH LIQUEFACTION, Gerald E. Kunkle, et al., Owner of Record: *PPG Industries, Pittsburgh, Pa.,* Attorney or Agent: Dennis G. Millman, Ex. Gp.: 130, Requester: Owner

4,387,440, Reexam. No. 90/000,703, Requested: Jan. 3, 1985, Cl. 364/900, MODEM CONTROL DEVICE CODE MULTIPLEXING, Michael D. Eaton, Owner of Record: *Business Computer Corp., Sunnyvale, Calif.,* Attorney or Agent: Limbach, Limbach, et al., Ex. Gp.: 230, Requester: Owner

4,451,645, Reexam. No. 90/000,705, Requested: Jan. 4, 1985, Cl. 528/403, EPOXY COMPOUNDS, Peter Johncock, Owner of Record: *The Secretary of State for Defence in Her Britannic Majesty's Gov't of the United Kingdom of GBX & Northern Ireland, London, England,* Attorney or Agent: Cushman, Darby, et al., Ex. Gp.: 150, Requester: Owner

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THERESA A. BRELSFORD,
Jan. 16, 1985. *Assistant Commissioner for Administration.*

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
Docket 50103-5003

Arbitration of Patent Interference Cases

Agency: Patent and Trademark Office, Commerce
Action: Advance Notice of proposed rulemaking
Summary: Section 105 of the Patent Law Amendments Act of 1984 provides for arbitration of patent interferences cases. The Patent and Trademark Office plans to issue regulations to implement the arbitration provisions of the Patent Law Amendments Act of 1984. Interested individuals are invited to make suggestions and to comment on the proposed rules being considered. A notice of proposed rulemaking could be published as early as Apr. 1, 1985.
Dates: Comments and suggestions should be received by Mar. 1, 1985.
Address: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231 marked to the attention of Fred E. McKelvey (703) 557-4025.
For Further Information Contact: Fred E. McKelvey, by telephone at (703) 557-4025, or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: Section 105 of the Patent Law Amendments Act of 1984, Public Law 98–622, enacted on Nov. 8, 1984, provides for arbitration of patent interference cases. Section 105, codified as 35 U.S.C. §135(d), provides:

> Arbitration of Interferences
>
> Parties to a patent interference, within such time as may be specified by the Commissioner by regulation, may determine such contest or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of title 9 to the extent such title is not inconsistent with this section. The parties shall give notice of any arbitration award to the Commissioner, and such award shall, as between the parties to the arbitration, be dispositive of the issues to which it relates. The arbitration award shall be unenforceable until such notice is given. Nothing in this subsection shall preclude the Commissioner from determining patentability of the invention involved in the interference.

The Patent and Trademark Office (PTO) conducts interference cases to determine who as between two or more applicants for patent or one or more applicants and one or more patentees is the first inventor of a patentable invention. Patent interference cases can be quite expensive. Arbitration may prove useful to minimize expenses in interference cases.

Arbitration will be governed by title 9 of the U.S. Code to the extent that title 9 is not inconsistent with §105 of Public Law 98–622. Within the confines of title 9 of the U.S. Code and §105 of Public Law 98–622, the parties can agree on the procedure to be used in arbitrating a patent interference case. An example of rules which parties might adopt are the Patent Arbitration Rules of the American Arbitration Association (June 1, 1983).

The PTO favors settlement of interference cases, but has not had extensive experience in connection with arbitration of interferences. It has been suggested that patent attorneys and agents likewise may have had little experience with arbitration of patent matters. Field, *Patent Arbitration: Past, Present, and Future,* 24 Idea 235 (1984). The following non-exhaustive list of articles may be helpful to familiarize readers with arbitration in patent matters generally: (1) Field, *supra;* (2) Goldstein, *Arbitrating Disputes Relating to Patent Validity and Infringement,* 72 Illinois Bar Journal 350 (Mar. 1984); (3) Carmichael, *Arbitration of Patent Disputes,* 38 The Arbitration Journal 3 (Mar. 1983); (4) Note, *Arbitration and Intellectual Property: A Survey of Arbitration in Patent, Trademark and Copyright cases,* 48 Albany Law Journal 797 (1984) (the entire Spring 1984 edition of the Albany Law Journal is directed to arbitration issues), (5) Devitt, *International Arbitration of Patent Disputes,* 65 J. Pat. Off. Soc'y 621 (1983); (6) *PTC Research Report; Alternatives to Court Litigation in Intellectual Property Disputes: Binding Arbitration and/or Mediation—Patent and Nonpatent Issues,* 22 Idea 271 (1982); (7) Davis, *Resolving Patent Disputes by Arbitration and Minitrial,* 65 J. Pat. Off. Soc'y 275 (1983); (8) Davis, *A New Approach to Resolving Costly Litigation,* 61 J. Pat. Off. Soc'y 482 (1979); and (9) Janicke, *Resolving Patent Disputes by Arbitration: An Alternative to Litigation,* 62 J. Pat. Off. Soc'y 339 (1980).

In order to provide some basis for comments and suggestions, a proposed §1.690 being considered is set out in this notice.

Paragraph (a) of proposed §1.690 being considered states, consistent with §105 of Public Law 98–622, that parties to an interference may determine the interference or any aspect thereof by arbitration. This paragraph would permit parties to arbitrate the issue of priority based on counts (and claims corresponding thereto) as determined by the PTO and set out in a notice declaring the interference. One issue which might arise in arbitration is the extent to which parties may arbitrate other "aspects" of an interference, e.g., the scope of a count and claims corresponding thereto. Section 105 of Public Law 98–622 vests the PTO with final authority, subject to judicial review, to determine patentability. Hence, interested individuals may wish to consider and comment on the effect of an award which arbitrates the scope of a count (or claims corresponding thereto) or the ultimate issue of priority based on that count where the PTO later determines that the counts or claims corresponding thereto were improper vehicles for deciding priority.

Paragraph (b) of proposed §1.690 being considered states that an arbitration shall take place within such time as an examiner-in-chief may set. The examiner-in-chief would set a time for making an award on a case-by-case basis depending upon the status of the case. For example, if all the testimony had been taken and the only issue for the arbitrator was deciding priority based on that testimony, a relatively short time could be set. On the other hand, if the parties wanted witnesses to appear before the arbitrator, a longer period of time might be needed. Extensions of time for making an award could be obtained under 37 CFR §1.645 (49 F.R.48464 (Dec. 12, 1984)). However, it should be expected that the examiner-in-chief will make a reasonable effort to dispose of the interference within 24 months from the date it is declared. 37 CFR §1.610 (49 F.R. 48457 (Dec. 12, 1984)).

Paragraph (c) of proposed §1.690 being considered would provide that an award shall be in writing and shall be definite with respect to the issue or issues arbitrated and to the disposition of each issue. The arbitration award would have to be signed by the arbitrator or arbitrators and would have to be filed in the PTO within twenty (20) days from the date of the award. As between the parties, the award would be dispositive of the issues arbitrated.

Paragraph (d) of proposed §1.690 being considered states that an arbitration award does not preclude the Office from determining patentability of any invention involved in an interference. Thus, the parties cannot establish *vis-a-vis* the public that subject matter is patentable.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations, Conflicts of interest, Courts, Inventions and patents, Lawyers.

The proposed rule under consideration would add §1.690 to Subpart E of 37 CFR Part 1 as follows:

§1.690 Arbitration of Interferences

(a) Parties to a patent interference may determine the interference or any aspect thereof by arbitration.

(b) An interference or any aspect thereof shall be arbitrated within such time as may be authorized on a case-by-case basis by an examiner-in-chief.

(c) An arbitration award shall be in writing and shall state in a clear and definite manner (1) the issue or issues which were arbitrated and (2) the disposition of each issue. The parties shall give notice to the Office of an arbitration award by filing within twenty days from the date of the award a copy of the award signed by the arbitrator or arbitrators. When an award is timely filed, the award shall, as to the parties to the arbitration, be dispositive of the issue to which it relates.

(d) An arbitration award shall not preclude the Office from determining patentability of any invention involved in the interference.

Jan. 8, 1985.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

U.S. GOVERNMENT-OWNED INVENTIONS
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The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve ex-

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Technical and licensing information on specific inventions may be obtained by writing to:

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U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-327,296 (4,480,040). SENSITIVE AND RAPID DIAGNOSIS OF VIROID DISEASES AND VIRUSES.

SN 6-448,675 (4,483,950). MODIFIED STARCHES AS EXTENDERS FOR ABSORBENT POLYMERS.

SN 6-518,779 (4,483,689). ABRASION-RESISTANT DURABLE-PRESS ACRYLIC FINISHES FOR COTTON TEXTILES BY USE OF NONOXIDATIVE POLYMERIZATION INITIATORS AND ACCELERATORS IN TWO-STAGE HEAT CURING.

SN 6-532,431 (4,484,539). OVIPOSITIONAL STIMULANT FOR TRICHOGRAMMA SPP.

SN 6-637,241. SOIL SAMPLING APPARATUS.

DEPARTMENT OF COMMERCE

SN 6-261,415 (4,481,517). ECHOMETRY DEVICE AND METHOD.

SN 6-671,539. PROCESS OF SYNTHESIZING MIXED BaO-TiO2 BASED POWDERS FOR CERAMIC APPLICATIONS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-548,849. SAPONIN-BASED POLYETHER POLYOLS.

SN 6-554,795 (4,487,693). MULTI-LAYER COIL COUNTERCURRENT CHROMATOGRAPH WITH ADJUSTABLE REVOLUTIONAL RADIUS.

SN 6-582,759 (4,486,179). BIOCOMPATIBLE CEMENTITIOUS DENTAL COMPOSITIONS.

SN 6-657,630. IMMORTAL LINE OF HUMAN FETAL GLIAL CELLS.

SN 6-663,969. TRANSDUCER HYDROPHONE WITH FILLED RESERVOIR.

DEPARTMENT OF INTERIOR

SN 6-376,852 (4,387,655). METHOD FOR CONTROLLED BURNOUT OF ABANDONED COAL MINES AND WASTE BANKS.

DEPARTMENT OF THE AIR FORCE

SN 6-552,552 (4,476,062). PSEUDO-P-1,1,2,2,9,9,10,10-OCTOFLUORO[2,2]-P-CYCLOPHANE BIS-ACID CHLORIDE.

SN 6-627,691. DATA ACQUISITION CHANNEL APPARATUS.

SN 6-643,201. MINIATURE HIGH PERFORMANCE PULSED MODULATOR APPARATUS.

SN 6-651,961. MULTIPLE RATE SHOCK ISOLATOR DAMPING VALVE

SN 6-651,983. HEATER BLOCK ASSEMBLY FOR USE IN THERMAL OXIDATION TESTING OF JET FUEL.

SN 6-653,641. PROGRAMMABLE REALTIME INTERFACE BETWEEN A BLOCK FLOATING POINT PROCESSOR AND MEMORY.

SN 6-654,338. INTEGRATED DEFENSE COMMUNICATIONS SYSTEMS ANTIJAMMING ANTENNA SYSTEM.

SN 6-656,844. AN ADAPTIVE FAST FOURIER TRANSFORM WEIGHTING TECHNIQUE TO INCREASE SMALL TARGET SENSITIVITY.

SN 6-656,845. GAIN RESTORATION AFTER DOPPLER FILTERING.

SN 6-657,099. A TECHNIQUE FOR RAPID DETERMINATION OF PROBABILITY OF DETECTION IN PULSE DOPPLER RADARS.

SN 6-657,100. INERT ATMOSPHERE TRANSFER VESSEL.

SN 6-661,549. HIGH EFFICIENCY ELECTRON BEAM GUN FOIL SUPPORT.

SN 6-661,834. FLOW MEASUREMENT DEVICE.

DEPARTMENT OF THE ARMY

SN 6-669,912. DUAL MODE SCANNER/TRACKER.

ENVIRONMENTAL PROTECTION AGENCY

SN 6-514,192 (4,485,747). REDUCING POLLUTANT EMISSIONS BY FINES REMOVAL.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 12, 1985

Plt. 5,273	4,427,835	4,451,727	4,464,791
Re. 31,351	4,429,963	4,451,872	4,464,889
Re. 31,635	4,431,293	4,452,456	4,465,052
4,163,562	4,433,714	4,452,556	4,465,398
4,188,541	4,434,067	4,452,685	4,466,016
4,235,801	4,434,614	4,452,936	4,466,284
4,289,354	4,434,658	4,454,068	4,466,413
4,300,249	4,438,596	4,454,494	4,466,461
4,320,390	4,439,445	4,455,316	4,466,487
4,327,302	4,439,977	4,455,337	4,466,964
4,338,478	4,440,079	4,455,400	4,467,022
4,344,860	4,440,135	4,455,553	4,467,304
4,350,411	4,441,113	4,455,761	4,467,307
4,354,402	4,441,557	4,456,080	4,467,433
4,356,110	4,442,918	4,456,438	4,467,519
4,359,340	4,444,668	4,456,702	4,467,593
4,364,756	4,445,142	4,456,771	4,467,971
4,366,330	4,445,856	4,456,780	4,468,335
4,367,519	4,446,012	4,457,602	4,468,345
4,371,622	4,446,118	4,457,867	4,468,385
4,371,663	4,447,363	4,459,149	4,468,482
4,376,835	4,447,450	4,459,277	4,468,545
4,383,123	4,447,628	4,460,034	4,468,612
4,389,967	4,447,831	4,460,665	4,468,870
4,395,462	4,448,552	4,460,698	4,468,902
4,407,063	4,448,658	4,460,731	4,469,043
4,407,832	4,448,700	4,460,797	4,469,091
4,411,454	4,448,784	4,460,867	4,469,177
4,411,884	4,448,867	4,461,807	4,469,252
4,411,994	4,450,282	4,462,143	4,469,530
4,412,539	4,450,319	4,462,513	4,469,698
4,413,006	4,450,579	4,463,463	4,469,890
4,414,333	4,450,770	4,463,844	4,471,961
4,414,589	4,451,033	4,463,941	4,472,021
4,418,972	4,451,165	4,464,290	
4,424,222	4,451,612	4,464,638	

Disclaimers

4,064,529.—*Harold George Seer, Jr.*, Woodbury, N.J. APPARATUS FOR AUTOMATIC COLOR BALANCING OF COLOR TELEVISION SIGNALS. Patent dated Dec. 20, 1977. Disclaimer filed Dec. 7, 1984, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to claims 1, 2, 4 and 5 of said patent.

4,227,704.—*James G. Blaha*, Painesville, Ohio. SEAL. Patent dated Oct. 14, 1980. Disclaimer filed Dec. 17, 1984, by the assignee, *Towmotor Corp.*

Hereby enters this disclaimer to claims 1 through 20 of said patent.

4,295,173.—*Lubomyr T. Romankiw*, Briarcliff Manor and *David A. Thompson*, South Salem, N.Y. THIN FILM INDUCTIVE TRANSDUCER. Patent dated Oct. 13, 1981. Disclaimer filed Dec. 5, 1983, by the assignee, *International Business Machines Corp.*

The term of this patent subsequent to Feb. 26, 1997 has been disclaimed.

4,372,078.—*Gorden W. Spring*, Norwalk, Calif. TOY MOVABLE BY ALTERNATELY RELOCATING INDIVIDUAL MEMBERS OF A PAIR OF BODY PARTS. Patent dated Feb. 8, 1983. Disclaimer filed Dec. 28, 1983, by the assignee, *Tomy Corp.*

Hereby enters this disclaimer to claims 1–23 of said patent.

4,417,802.—*Richard L. Forbes II*, Walworth, N.Y. PARTICLE DISPENSER. Patent dated Nov. 29, 1983. Disclaimer filed Sept. 21, 1984, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to claims 1 through 8 of said patent.

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California	Los Angeles Public Library	(213) 626-7555 Ext. 273
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	Miami–Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 5, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	6-06-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	3-28-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-12-80
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	3-21-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	10-01-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	5-07-82
DESIGN, GROUP 290—K. L. CAGE, Director	9-09-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	3-04-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-13-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	12-01-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	12-21-81
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during January 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,360,800 to 3,366,969, inclusive

Plant Patents ..... Numbers 2,784 to 2,793 inclusive

REISSUES

FEBRUARY 12, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

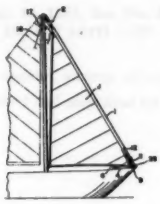
Re. 31,829
TWO GROOVE HEADSTAY

Leathem S. Stearn, 111 N. First Ave., Sturgeon Bay, Wis. 54235

Original No. 3,851,609, dated Dec. 3, 1974, Ser. No. 385,443, Aug. 3, 1973. Continuation-in-part of Ser. No. 282,414, Aug. 21, 1972, Pat. No. 3,851,608. Application for reissue Jul. 26, 1982, Ser. No. 401,534

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—105 23 Claims



1. A jibstay assembly for a sailboat comprising a longitudinal member extending and supported between the bow portion of the boat and the upper portion of the boat mast, said member being *torsionally resistant,* generally rounded in cross-sectional shape and having two grooves inset therein, each of which is adapted to slidably receive and release and to hold a bead at the luff of a jib sail[.] *and facilitate the changing of jib sails.*

Re. 31,830
INFECTIOUS BRONCHITIS VACCINE FOR POULTRY

Peter Apontoweil, EK Leersum, and Manfred M. Krasselt, EP de Bilt, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Original No. 4,357,320, dated Nov. 2, 1982, Ser. No. 209,583, Nov. 24, 1980. Application for reissue Mar. 18, 1983, Ser. No. 476,505

Claims priority, application Netherlands, Nov. 13, 1979, 7908687; Sep. 9, 1980, 8005083

Int. Cl.³ A61K *39/215*

U.S. Cl. 424—89 17 Claims

11. A method of preventing infectious bronchitis in poultry comprising administering to poultry an amount of a combined vaccine of claim 1 sufficient to prevent infectious bronchitis.

Re. 31,831
SUBSTITUTED PHENOXYBENZOIC ACIDS AND ESTERS THEREOF

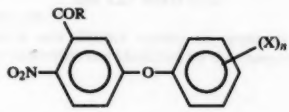
Robert J. Theissen, Westfield, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Original No. 3,784,635, dated Jan. 8, 1974, Ser. No. 114,712, Feb. 11, 1971. Continuation-in-part of Ser. No. 819,412, Apr. 25, 1969, Pat. No. 3,652,645. Application for reissue Jun. 25, 1981, Ser. No. 277,470

Int. Cl.³ C07C *79/46*

U.S. Cl. 560—021 5 Claims

1. A compound having the formula:



wherein X is a [member] *combination of the members* selected from the group consisting of nitro and trifluoromethyl, *wherein both of said members must be present,* R is selected from the group consisting of hydroxy and alkoxy of 1 to 5 carbon atoms, n is an integer of [1] 2 to 5 [, and in which a compound R is alkoxy when X is nitro].

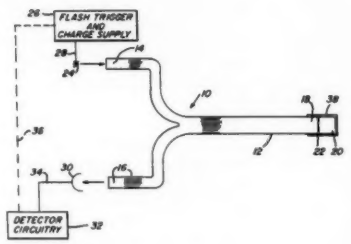
Re. 31,832
TEMPERATURE PROBE

Thaddeus V. Samulski, 649 Maybell Ave., Palo Alto, Calif. 94306

Original No. 4,245,507, dated Jan. 20, 1981, Ser. No. 73,841, Sep. 10, 1979. Application for reissue Jan. 6, 1983, Ser. No. 456,330

Int. Cl.³ G01K *11/20*

U.S. Cl. 374—131 38 Claims



31. A system for measuring temperature of an environment, comprising:

a quantity of luminescent material positionable in thermal communication with said environment, said luminescent material characterized by emitting, when excited with transient radiation, luminescent radiation that continues in time beyond the termination of the excitation radiation and with a rate of decay that is related to the temperature of the luminescent material,

means for exposing said luminescent material to such transient excitation radiation, thereby to cause said luminescent material to luminesce with a decaying intensity extending beyond the termination of said excitation radiation, and

means receiving the luminescent material luminescence for measuring the rate of decay of said luminescence pulse, thereby to measure the temperature of the luminescent material.

PLANT PATENTS

GRANTED FEBRUARY 12, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,404

RED RASPBERRY, N.Y. 883

John C. Sanford, Geneva, and Donald K. Ourecky, Rochester, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Sep. 16, 1982, Ser. No. 418,964

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—46 **1 Claim**

1. The new and distinct variety of red raspberry herein described and illustrated and identified by the characters enumerated above.

5,405

PURPLE RASPBERRY, N.Y. 632

John C. Sanford, Geneva; Donald K. Ourecky, Rochester, both of N.Y., and George L. Slate, deceased, late of Hilton, N.Y. (by Barbara S. Abbott, heir), assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Sep. 16, 1982, Ser. No. 418,965

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—46 **1 Claim**

1. The new and distinct variety of raspberry herein described and illustrated and identified by the characters enumerated above.

PATENTS

GRANTED FEB. 12, 1985

ERRATA

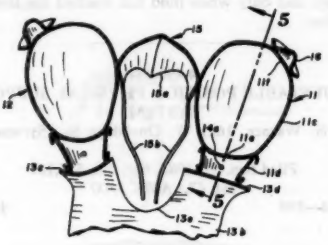
For CLASS	See PATENT NO.
534–697	4,499,015
514–428	4,499,019
514–002	4,499,079
514–012	4,499,080
514–017	4,499,081
514–002	4,499,082
514–036	4,499,083
514–046	4,499,084
514–058	4,499,085
514–211	4,499,087
514–202	4,499,088
514–222	4,499,089
514–210	4,499,090
514–254	4,499,091
514–254	4,499,092
514–258	4,499,093
514–301	4,499,094
514–299	4,499,095
514–214	4,499,096
514–314	4,499,097
514–364	4,499,098
514–299	4,499,099
514–321	4,499,100
514–374	4,499,101
514–365	4,499,102
514–365	4,499,103
514–396	4,499,104
514–631	4,499,105
514–603	4,499,106
514–575	4,499,107
514–653	4,499,108
044–051	4,499,267
514–570	4,499,299
514–605	4,499,303
366–316	4,499,445
364–200	4,499,604

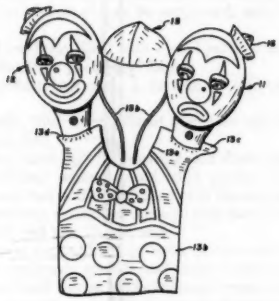
PATENTS

GRANTED FEBRUARY 12, 1985

GENERAL AND MECHANICAL

4,498,199
MULTIPLE HEADED COSTUME
Mark D. Margolis, Bloomington, Minn., assignor to Spearhead Industries, Inc., Minneapolis, Minn.
Filed May 4, 1983, Ser. No. 491,620
Int. Cl.³ A41D *11/00*
U.S. Cl. 2—69 **11 Claims**

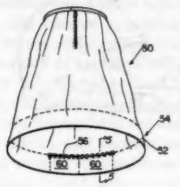




1. A costume unit to provide the effect of a multi-headed figure when worn on a person, such costume unit including:
   a. an inflatable member arranged and constructed to simulate a head;
   b. means for inflating said head member;
   c. a base portion arranged and constructed for placement and positioning on the shoulders of the person using the costume; and,
   d. said inflatable, simulated head being secured to said base portion whereby said head is positioned in side-by-side relation to the head of the user.

4,498,200
GARMENT HAVING CONCEALED POUCH
Jeanne Livingstone, 1025 Stuart St., Helena, Mont. 59601
Filed Jul. 30, 1982, Ser. No. 403,541
Int. Cl.³ A41D *27/20, 1/14*
U.S. Cl. 2—247 **2 Claims**

1. In combination with a garment having a hem at an open end thereof, at least one pocket defined by the hem adjacent the open end, said hem being folded on itself and stitched and held fast to the outer material of the garment by hemstitching, said hemstitching which is a sufficient distance above the selvage of the hem to accommodate said pocket, the pocket being sealable by a linear closure element that is integral with the inside hem material of the garment and being disposed at direct in-line continuation and interconnection of the hemstitching line, the hemstitching line being discontinued to accommodate the pocket, said linear closure element being



secured by stitching directly to each end of the hemstitching line and thus to the outer material of the garment.

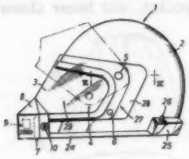
4,498,201
TROUSER SUPPORT SYSTEM
R. S. Carter, 3416 Purdue, Dallas, Tex. 75225
Filed Sep. 2, 1982, Ser. No. 414,300
Int. Cl.³ A41F *9/00*
U.S. Cl. 2—312 **7 Claims**

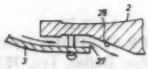
1. A support device for trousers comprising: a flexible supporting belt having adjustable length fastening means for fastening the belt around the hip region of the user; duplicate support arms pivotally mounted on opposite sides of said flexible supporting belt; pivotal interconnect mounting means interconnecting each of said duplicate support arms to said flexible supporting belt; duplicate trouser waistband stiffeners pivotally mounted on said duplicate support arms at the ends thereof remote from the pivotal mounting of said flexible supporting belt; and connection means connecting said trouser waistband stiffeners to opposite sides of a trouser waistband.

4,498,202
HELMET EQUIPPED WITH VENTILATOR
Tamenobu Yamamoto, Higashi-Osaka, Japan, assignor to Yamamoto Kogaku Co., Ltd., Higashi, Japan
Filed Feb. 24, 1983, Ser. No. 469,246
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—424 **8 Claims**

1. A helmet having a shell, a face shield at an opening in the shell, a protector portion positionable at the chin of a wearer, and a ventilator located in the protector portion, for ventilating the space between the face shield and the face of the wearer of the helmet, the ventilator comprising a case attached to the shell of the helmet and having an inside opening open to the inside of the face shield and an outside opening communicating with the inside opening and open to the outside the helmet, and air passing means including an electric motor and a fan in the case for causing the air flowing through the space to form a

stream along the inner surface of the face shield, wherein the air passing means forms a blower for drawing atmospheric air into the case through the outside opening and supplying the air to the inner surface of the face shield from the inside opening,





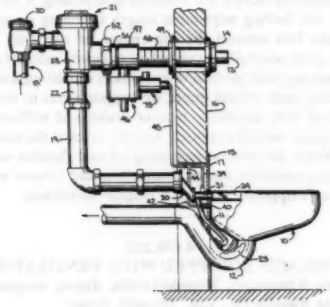
wherein a clearance is formed at each side end of the face shield between the face shield and the helmet shell to serve as a vent, whereby the air supplied by the blower forms a stream flowing along the inner surface of the face shield and is discharged from the vent.

4,498,203

FLOOD PREVENTER FOR FLUID FILLING SYSTEMS

Thomas G. Barnum, Fox Point, and Thomas E. Pelt, Greenfield, both of Wis., assignors to Bradley Corporation, Menomonee Falls, Wis.

Continuation-in-part of Ser. No. 498,149, May 25, 1983, abandoned. This application May 9, 1984, Ser. No. 608,392
Int. Cl.³ E03D *11/02, 11/18*
U.S. Cl. 4—427 **18 Claims**



1. A pneumatically responsive flood preventer mechanism for insertion between a valve in a supply line to a receptacle and a reciprocating actuator for the valve, to prevent repeated actuation of the valve which would cause overfilling and flooding of the receptacle, the mechanism comprising:

vacuum generating means in the supply line with a low pressure port for drawing a partial vacuum as fluid flows through said means into the receptacle;

a level sensor having an orifice communicating with the receptacle above a normal fluid level, the orifice allowing relief of any partial vacuum communicated to the level sensor when fluid in the receptacle is below the orifice, and the orifice becoming partially sealed when covered by fluid from the receptacle;

lockout means adapted to be positioned between the valve and the actuator to prevent operation of the valve when fluid in the receptacle rises to the level of the orifice, the lockout means being responsive to a partial vacuum to disable operation of the valve by the actuator; and

means for pneumatically interconnecting the lockout means, the low pressure port and the level sensor, so that a partial vacuum will be drawn to operate the lockout means only when fluid is flowing through the vacuum generating means and only when fluid has reached the level of the orifice.

4,498,204

ADJUSTABLE POSITION PHYSICAL SUPPORT SYSTEM

Stanley H. Warner, 1621 W. Onondaga St., Syracuse, N.Y. 13204

Filed Sep. 21, 1983, Ser. No. 534,157
Int. Cl.³ A47K *3/00*
U.S. Cl. 4—559 **10 Claims**

1. A support device for installation between the floor and ceiling of a room, said support device comprising, in combination:

(a) a pair of elongated, hollow rods, arranged for coaxial, telescoping, relative axial movement;

(b) a first plate affixed to the non-telescoping end of one of said rods and having a planar surface of a first area normal to the axis of said rods;

(c) a second plate affixed to the non-telescoping end of the other of said rods and having a planar surface of a second area parallel to said first plate planar surface;

(d) means defining an internally threaded opening in the telescoping end of one of said rods;

(e) an elongated, externally threaded member having a first end threadedly inserted into said internally threaded opening to extend coaxially into the telescoping end of the other of said rods; and

(f) connecting means for rigidly affixing said externally threaded member and said other rod in any of a plurality of relative axial positions, whereby the overall length of said pair of rods is selectively adjustable by a combination of the axial position at which said externally threaded member and said other rod is affixed and the rotational movement of said externally threaded member into and out of said internally threaded opening, to permit said first and second plates to be rapidly adjusted to a desired axial length and advanced into tight frictional, non-piercing,

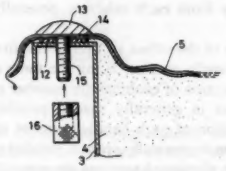
engagement with the floor and ceiling, respectively of the room in which said support device is installed.

4,498,205

MEDICAL BED WITH SHEET RETAINING MEANS

Kazuhiko Hino, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Dec. 1, 1982, Ser. No. 445,781
Claims priority, application Japan, Dec. 1, 1981, 56-178803[U]
Int. Cl.³ A47C *27/08, 21/00*
U.S. Cl. 5—449 **2 Claims**



1. A medical bed of the type wherein a sheet covers a solid particle media in a bed body and compressed air is supplied into said bed body to fluidize said solid particle media whereby a patient lying on said sheet may be supported, said bed comprising;

a box-shaped bed body filled with a solid particle media, said bed body having a peripheral flange;

a packing member covering a surface of said peripheral flange;

a gas-permeable filter sheet placed over said bed body and packing member;

sheet-retaining hand rails for pressing said sheet against said packing member whereby said solid particle media are sealed in said bed body, said hand rails having a plurality of hook portions extending through said sheet, said packing member and said flange; and

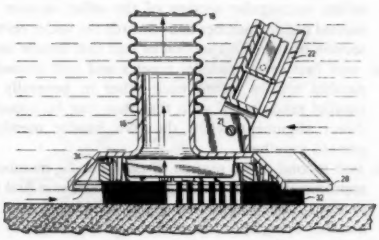
clamping means for pulling said hook portions to urge said hand rails uniformly against said sheet around the entire periphery of said flange, said clamping means comprising latch lock coupling means mounted on an exterior of said bed body and including loop-like coupling means for engaging said hook portions.

4,498,206

VACUUM HEAD FOR CLEANING UNDERWATER SURFACES

Heinz W. Braukmann, 98 Heathcote Ave., Willowdale, Ontario, Canada M2L 1Z4

Filed Apr. 21, 1983, Ser. No. 487,230
Claims priority, application Canada, Mar. 22, 1983, 424164
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 **5 Claims**



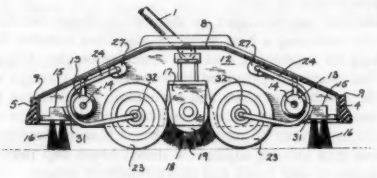
1. A vacuum head for cleaning swimming pool underwater surfaces comprising a transverse wall, an integral skirt depending downwardly from the perimeter of said transverse wall, an upwardly extending integral conduit to said transverse wall, said conduit being adapted for sealing connection to a flexible vacuum hose, a brush member securable to the underside of said transverse wall, spaced inward of said skirt and around said conduit in spaced relationship therefrom, bristles on said brush member extending into a plane below that of the lower edge of said skirt, said conduit providing for suction of the material disturbed by the action of said bristles on said underwater surface, a plurality of apertures defined by spacing said brush member from the underside of said transverse wall, said apertures providing for suction therethrough to said conduit of the suspended material contained in the water located between said skirt and said bristles, said vacuum head being made of a plastic material and weights attached to said transverse wall to sink said vacuum head to said underwater surfaces.

4,498,207

FLOOR SWEEPER WITH IMPROVED DRIVE WHEEL CONSTRUCTION

Henry J. Rosendall, Grand Rapids, Wis., assignor to Bissell Inc., Grand Rapids, Mich.

Filed Jul. 1, 1983, Ser. No. 510,209
Int. Cl.³ A47L *11/33*
U.S. Cl. 15—42 **12 Claims**



1. In a floor sweeper, the combination comprising:

(a) a housing;

(b) a rotatable brush fixedly mounted on an axle within said housing and with said brush being positioned for contact with the floor for sweeping debris therefrom;

(c) coupling wheels disposed on said axle at opposite end thereof;

(d) horizontally and vertically movable drive wheels disposed within said housing for supporting said sweeper for reciprocating fore and aft translation over the floor, said drive wheels mounted in frictional contact with said coupling wheels for free movement between loaded and unloaded positions in response to said fore and aft translation; and

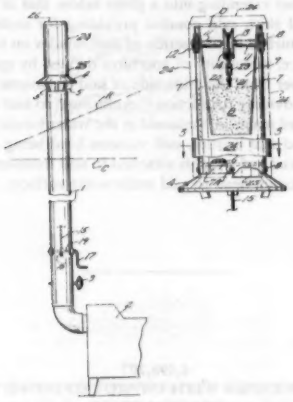
(e) spring means disposed within said housing which acts against said drive wheels to urge said drive wheels into their loaded positions so that they are in driving frictional contact with said coupling wheels to effect rotation of said brush when said sweeper is moved in one direction and acts to effect unloading of said drive wheels when said sweeper is moved in the other direction, said spring means includes a curved spring having horizontally disposed parallel legs at opposite ends thereof extending transversely to the curve in said spring, one of said legs being mounted for pivotal movement about a horizontal axis, and the other of said legs defining an axle for carrying a said drive wheel.

4,498,208

CHIMNEY CLEANING SYSTEM

Henry F. Henderson, 55786 Bivouac Rd., Bend, Oreg. 97702

Filed May 26, 1983, Ser. No. 498,632
Int. Cl.³ F23J 3/00
U.S. Cl. 15—163 **3 Claims**



1. A chimney cleaning comprising,

a brush for contact with the chimney internal walls,

an elongate flexible member on which said brush is supported,

adjustment means on said flexible member to permit varying the tension of same,

a chimney cap structure for disposition above the chimney and including a base member, said base member having legs for supporting said cap structure on the chimney so that spaces are provided between the legs through which the combustion gases and particulate material can pass a brush housing in place on said base member and in which the brush may be stored, said brush housing having a cut out area located adjacent a stored brush and permitting access to said brush and said adjustment means,

a detachable closure disposed about said brush housing and defining a dead air space, and

pulley means in said brush housing on which the elongate flexible member is entrained, crank and pulley means for installation within the chimney to enable imparting rectilinear travel to said brush for downward entry into and travel along said chimney to clean same whereupon the brush may be retracted upwardly from the chimney by said flexible member for storage in the dead air space within said brush housing.

4,498,209

TWIN DENTAL BRUSH

Leslie Weiss, #354 607 Franklin Ave., Hollywood, Calif. 90028

Filed Mar. 25, 1983, Ser. No. 479,001
Int. Cl.³ A46B 9/04
U.S. Cl. 15—167 A **3 Claims**

1. A dental brush for simultaneously brushing both faces of a tooth comprising:

a. a first handle member;

b. said first handle member comprising a first straight section and a second offset section which extends from one end of the first straight section and at a uniform angle to the first straight section;

c. said second offset section of the first handle member further comprising a slender elongated section adjacent said first section at one end and a tranversely wider, generally rectangular section at the other end of the slender elongated section;

d. a second handle member;

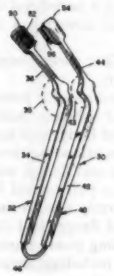
e. said second handle member containing a first straight section and a second offset section which extends from one end of the first straight section and at a uniform angle to the first straight section;

f. said second offset section of the second handle member further comprising a slender elongated section adjacent said first section at one end and a tranversely wider, generally rectangular section at the other end of the slender elongated section;

g. said first handle member and said second handle member pivotally attached at the lower portion of each first section such that the two handle members extend upwardly and away from each other in generally spaced parallel planes;

h. the angle of the offset section to the first straight section of each handle member being the same such that the first straight section of each handle member extend away from each other in generally spaced parallel planes and the offset section of each handle member extend away from each other in generally spaced parallel planes so that the respective elongated sections are oppositely disposed and the respective wider sections are oppositely disposed;

i. said first handle member containing a first set of parallel bristles emanating from the wider, generally rectangular section of its offset section;



j. said first set of parallel bristles extending away from the wider rectangular section of the offset section of said first handle member and towards the wider rectangular section of the offset section of said second handle member;

k. said second handle member containing a second set of parallel bristles emanating from the wider, generally rectangular section of its offset section;

l. said second set of parallel bristles extending away from the wider rectangular section of the offset section of said second handle member and towards the wider rectangular section of the offset section of said first handle member;

m. said first set of parallel bristles and said second set of parallel bristles facing each other in generally spaced parallel relationship such that they can be brought into direct alignment when the two handle members are pressed together;

n. said second offset section of each handle member being approximately half the length of each of said first straight sections, said slender elongated section of each handle member being approximately twice the length of each of said generally rectangular sections; and

o. wherein the angle between each straight section and its offset section on each handle is approximately 135 degrees.

4,498,210

BRUSH BRISTLE UNIT FOR BRUSH ROLLS

Arthur E. Drumm, 20042 State Rte. #4, Marysville, Ohio 43040

Filed Nov. 30, 1983, Ser. No. 556,275
Int. Cl.³ A46B 7/10
U.S. Cl. 15—183 **3 Claims**

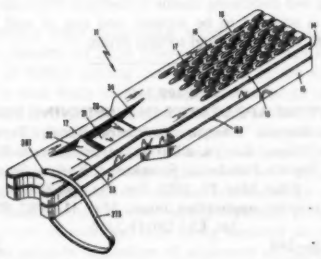
1. A bristle unit for slipping longitudinally into a longitudinally-extending channel socket on a sweeper drum, the channel socket having laterally-opposed guiding and retaining channel socket sections opening laterally-inwardly towards each other, comprising a mounting channel of metal having a base formed around a flat longitudinally-extending stiffening bar to form opposed laterally-outwardly extending parallel guiding and retaining double-flanged ears that are longitudinally continuous and adapted to slip longitudinally into said channel socket sections, and laterally-spaced parallel longitudinally extending spring flanges projecting radially-outwardly from said ears to receive a bristle strip therebetween, said bristle strip being formed of a U-shaped longitudinally-extending channel having laterally-spaced side flanges which project radially outwardly in the same direction as said spring flanges and which receive therebetween U-shaped bristles that have their inner U-ends retained therein by a retaining wire extending longitudinally therethrough and crimping at the sides of the flanges radially-outwardly of the wire, said spring flanges having two pairs of longitudinally-extending continuous ribs formed therein and consisting of inner and outer opposed ribs which project laterally-inwardly at radially-spaced inner and outer positions, the inner pair engaging the crimped sides of said flanges of the bristle-carrying channel and the outer pair extending over the outer edges of the flanges thereof, said flanges having laterally-outwardly flared curbed outer edges to prevent cutting of the bristles thereby when the bristles are bent into contact therewith during rotation of the drum.

4,498,211

RETRACTABLE BRUSH

Gary Bottolfson, Rapid City, S. Dak., assignor to Michael O'Connor, Vermillion, S. Dak., a part interest

Filed Feb. 6, 1984, Ser. No. 577,615
Int. Cl.³ A46B 9/10
U.S. Cl. 15—203 **16 Claims**



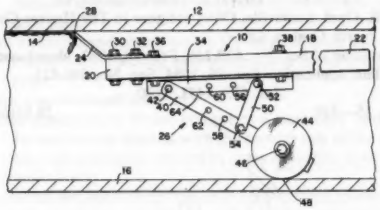
13. A folding brush comprising a case having parallel first and second walls respectively having first and second interior faces spaced from each other to form a cavity, the first wall including a matrix of cylindrical like slots extending between the first face and a third face on the exterior of the first wall, a frame slidable along a longitudinal axis in the cavity between a first retracted position and a second fully extended position, means for locking the frame in the first and second positions, a multiplicity of bristle tufts each having a longitudinal axis, means for mounting the bristle tufts on the frame so the longitudinal axes of the tufts rotate together from a first retracted angle displaced slightly from the frame longitudinal axis to a second fully extended angle approximately at right angles to the frame longitudinal axis in response to the frame sliding between the first and second longitudinal positions, the bristle tufts being positioned on the frame and the matrix of slots being arranged so that each of the bristle tufts is in a separate one of the slots, a slidable tongue having a first end fixedly connected to the frame located in the cavity, a second end of the tongue including feet means engaging one of the cavity faces, the locking means including: a detent bar on the tongue for engaging first and second longitudinal spaced notches in the second face of the handle cavity when the frame is respectively in the retracted and fully extended positions, the tongue being made of a flexible spring like material so the portion of the tongue between the ends thereof can be pressed into the cavity and the top of the detent bar is urged against the second face of the handle cavity while the detent bar is between the notches.

4,498,212

FLUE CLEANER

John D. Davis, P.O. Box 55, Black Mountain, N.C. 28711

Filed Sep. 1, 1983, Ser. No. 528,408
Int. Cl.³ F23J 3/02
U.S. Cl. 15—242 **9 Claims**



1. An improved flue cleaner comprising: an elongated rod having a free end and a handle end, a scraper connected to one side of said rod near said free end, a fulcrum assembly connected to the opposite side of said rod near said free end, said fulcrum assembly including a roller extending away from said rod, said roller being located between said handle end of said rod and said scraper but closer to said scraper, said scraper adapted to contact one side of the flue, said roller adapted to contact the other side of the flue whereby said roller acts as a fulcrum to pivot said scraper by back and forth action of the handle end of said rod; said roller being rotatably mounted to one end of a first bracket; the other end of said first bracket being pivotably connected to said rod; a second bracket connected to said first bracket; a third bracket mounted along the surface of said opposite side of said rod, said second bracket being connected to said third bracket to rigidly hold said roller away from said rod; the distance between said roller and said rod is variable for various sizes of flues; means for mounting said second bracket at various points along said first bracket and said third bracket.

4,498,213

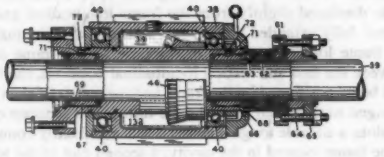
SOOT BLOWER

Gerald F. Zalewski, Albion, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Division of Ser. No. 478,291, May 17, 1983, , which is a division of Ser. No. 234,982, Feb. 17, 1981, Pat. No. 4,387,481. This application Mar. 16, 1984, Ser. No. 590,290

Int. Cl.³ F23J *3/02*

U.S. Cl. 15—316 R **3 Claims**



1. In a soot blower including a lance tube and lance tube support movable along a path of travel between working and non-working positions and a feed pipe in a co-axial, telescoping relation with said lance tube and lance tube support, a bushing arrangement which comprises

(a) at least one ring-shaped bushing element secured about the outer circumference of said feed pipe,

(b) said ring-shaped bushing element including an outer surface engaging the inner surface of said lance tube support,

(c) said outer surface of said ring-shaped bushing element being formed to a generally convex configuration whereby the lance tube support and feed pipe may pivot with respect to one another with the forces developed between the lance tube and feed pipe being distributed through the convex outer surface of said ring-shaped bushing element.

4,498,214

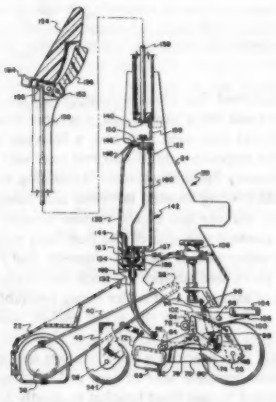
CARPET CLEANING APPARATUS WITH AUXILIARY CLEANING DEVICE ARRANGEMENT

Berton R. Oxel, Louisville, Ohio, assignor to The Hoover Company, North Canton, Ohio

Continuation of Ser. No. 470,226, Feb. 28, 1983, abandoned. This application Apr. 16, 1984, Ser. No. 600,423

Int. Cl.³ A47L *7/00*

U.S. Cl. 15—320 **24 Claims**



19. A carpet cleaning apparatus having a nozzle including a nozzle chamber communicating with a carpet surface, vacuum generating means for drawing dirt laden air through the nozzle chamber, an agitator including brushes, a handle assembly pivotally connected to the nozzle and movable between an operating position where it is generally inclined relative to a carpeted surface and a storage position where it is generally vertical relative to a carpeted surface, and an auxiliary cleaning device elongated in a direction transverse to direction of travel of the carpet cleaning apparatus and engageable with a carpet surface to provide additional cleaning, said carpet cleaning apparatus further comprising:

compensating means providing support for said auxiliary cleaning device at a generally central location along the transverse extent thereof and providing for change in transverse elevation of said auxiliary cleaning device in response to an uneven carpet surface thereby establishing a more uniform contact interrelationship between said auxiliary cleaning device and a carpet surface.

4,498,215

APPARATUS FOR CONVEYING MATERIAL AS IT IS REMOVED FROM ROWS OF BALES CONSTITUTING SPINNING MATERIAL

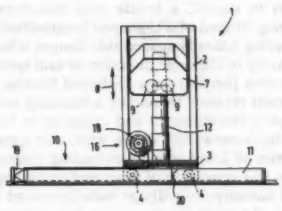
Hubert Hergeth, and Helmut Hergeth, both of Dulmen, Fed. Rep. of Germany, assignors to Hergeth Hollingsworth GmbH, Dulmen, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,849

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217184

Int. Cl.³ D01G *9/00;* **B65G** *53/26, 53/52*

U.S. Cl. 19—81 **23 Claims**



1. Apparatus comprising a generally elongated channel having an elongated longitudinally disposed slot, a frame, means for moving said frame along said channel, said frame including means for delivering material into and along said channel through said slot, a flexible belt, a first end of said flexible belt being secured to said channel, a second end of said flexible belt being secured to said frame, said flexible belt being adapted to be placed in overlying relationship to said slot upon movement of said frame along said channel whereby material delivered into said channel is covered by said belt, means carried by said frame for collecting and dispensing said belt during frame movement relative to said channel with belt dispensing taking place during material delivery, said belt collecting and dispensing means including a drum upon which said belt is adapted to be wound, and one of said first and second belt ends is secured to said drum.

4,498,216

DRAFTING APPARATUS IN A SPINNING FRAME

Yoshihisa Suzuki, Chiryu; Yoshiharu Yasui, Toyota, and Shigeru Takasu, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 27, 1983, Ser. No. 498,849

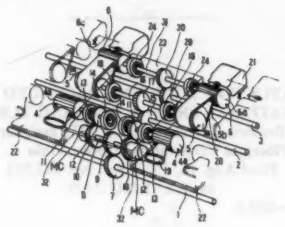
Claims priority, application Japan, May 31, 1982, 57-092515

Int. Cl.³ D01H *5/86*

U.S. Cl. 19—244 **5 Claims**

1. In drafting apparatus for a spinning frame or the like comprising a plurality of parallel, laterally spaced, rotatable, shaft means, bottom rollers mounted on each of said shaft

means, support means for engaging and supporting each shaft means, and drive means for rotating each shaft means, wherein the improvement comprises providing a pair of axially spaced, bottom rollers on each shaft means, one at one end of each respective shaft means and the other at the other end of each respective shaft means with the respective bottom roller of



each pair aligned in the same plane with the corresponding respective roller of each other pair, disposing said drive means and said support means between the pair of rollers of each pair and engaging said support means with said shaft means between the rollers of each pair whereby said rollers are unobstructed by said support means and said drive means and have oppositely facing free ends.

4,498,217

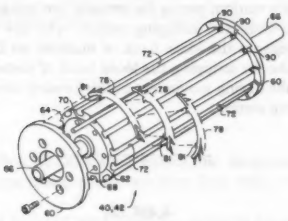
PILE FABRIC CUTTING DEVICE

Walter Engels, Tryon, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jun. 21, 1982, Ser. No. 390,320

Int. Cl.³ D06C *13/08*

U.S. Cl. 26—9 **4 Claims**



1. A cutting rotor comprising: a cylindrical body member having a plurality of axial grooves in the surface thereof, a plurality of helical cutting members equal to the number of grooves in said body member surface secured to said body member and having tabs integral therewith which project into said grooves and making a plurality of 360° wraps around said cylindrical body member, each of said helical cutting members having at least three cutting segments in 360° wrap of said helical member and end caps mounted on both ends of cutting rotor to maintain said helical cutting members on said body member, each of said end caps being serrated on the inside thereof to provide a number of abutment surfaces equal in number to the number of helical cutting members, each helical cutting member abutting one of the abutment surfaces on the inside of each end cap.

4,498,218

APPARATUS FOR TRANSMITTING A TAMPON BLANK TO A TAMPON PRESS

Axel Friese, Wuppertal, Fed. Rep. of Germany, assignor to Dr. Carl Hahn G.m.b.H., Dusseldorf, Fed. Rep. of Germany

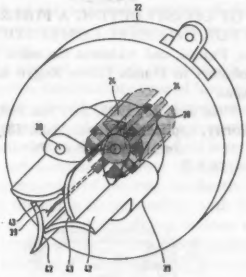
PCT No. PCT/DE81/00232, § 371 Date Aug. 13, 1982, § 102(e) Date Aug. 13, 1982, PCT Pub. No. WO82/02336, PCT Pub. Date Jul. 22, 1982

PCT Filed Dec. 21, 1981, Ser. No. 413,369

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049581

Int. Cl.³ A61F *13/20*

U.S. Cl. 28—119 **7 Claims**



1. In an apparatus for compressing a blank comprising absorbent material into a compressed tampon, said apparatus having:

a transmission device for containing a blank upstream of a tampon press;

said tampon press having press jaws forming a continuous opening and press jaw means for opening said jaws to receive said blank and for closing said jaws to compress said blank;

a push rod and means for reciprocating said push rod to transmit said blank from said transmission device into said press; and

an ejector mandrel and means for reciprocating said ejector mandrel for ejecting said compressed tampon from said press;

the improvement wherein:

said transmission device comprises a stationary basic body having an axis aligned with the central axis of the apparatus and a plurality of carrier jaws movably fixed to said basic body;

said carrier jaws being movable with respect to each other so as to form, in a first position, a first passage opening having closed walls defined by said jaws for enclosing said blank;

said jaws being movable with respect to each other so as to form, in a second position, a second passage opening having closed walls defined by said jaws for enclosing said compressed tampon;

said first and second passage openings being coaxial with the central axis of said apparatus;

said carrier jaws having a length in the direction of the central axis, at least equal to the length of the blank;

said push rod being axially positioned upstream of said transmission device and adapted to reciprocate into and out of said first passage opening for transmitting said blank into said press;

said ejector mandrel being axially positioned downstream of said press and having a diameter smaller than that of said compressed tampon and adapted to reciprocate into and out of said press;

carrier jaw moving means for moving said carrier jaws into said first and second positions;

said apparatus adapted for operation in sequence wherein said carrier jaws are moved into said first position by said

carrier jaw moving means and said press jaws are opened by said press jaw means;

said push rod is reciprocated into said first passage opening to transfer said tampon blank into said opened press jaws;

said press jaws are closed by said press jaw means to compress said blank, said carrier jaws are moved into said second position by said carrier jaw moving means, and said push rod is reciprocated to close the upstream end of said second passage opening; and

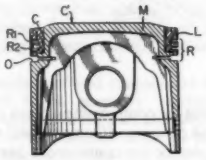
said ejector mandrel is reciprocated into said closed press jaws to eject said compressed tampon into said second passage opening.

4,498,219

METHOD OF CONSTRUCTING A FIBER-REINFORCED PISTON FOR INTERNAL COMBUSTION ENGINES

Keisuke Ban, Fujimi, and Akimasa Daimaru, Oomiya, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1982, Ser. No. 388,666
Claims priority, application Japan, Jun. 18, 1981, 56-94461
Int. Cl.³ B23P *15/10*
U.S. Cl. 29—156.5 R **3 Claims**



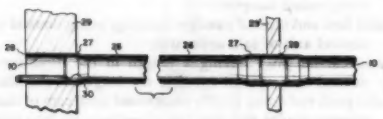
1. In a method of producing a fiber reinforced piston of an internal combustion engine comprising forming a molded body of inorganic fiber to constitute a top land and ring region for the piston and filling the molded body with a lightweight alloy matrix to integrally join the molded body and alloy matrix, the improvement comprising forming said inorganic fiber with less than 10% by weight of fiber granules having a particle diameter less than 100 mesh from a blanket by subjecting said blanket to a coarse granulated-fiber elimination treatment consisting of a vibration method and a wet type method.

4,498,220

METHOD FOR PRE-EXPANDING HEAT EXCHANGER TUBE

Donald S. Fiegen, LaCrescent, Minn., and Chester D. Ware, La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Aug. 23, 1982, Ser. No. 410,724
Int. Cl.³ B21D *53/02*; B23P *25/00*
U.S. Cl. 29—157.3 C **10 Claims**



8. A method for expanding a heat exchanger tube to which a nucleate boiling heat transfer enhancement treatment is applied, into a bore of a tube sheet or tube support, to minimize risk of splitting the tube, or degrading the treatment, comprising the steps of:

a. pre-expanding a selected section of the tube to a diameter slightly less than the diameter of the bore in the tube sheet or tube support;

b. applying the nucleate boiling heat transfer enhancement treatment to the exterior of the tube, where it is not pre-expanded;

c. inserting the pre-expanded section of the tube within said bore; and

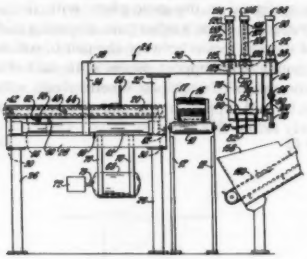
d. mechanically expanding the pre-expanded section of the tube within said bore to seat it.

4,498,221

APPARATUS FOR STRIPPING PACKAGED LINEAR MATERIAL FROM A FORMING TUBE

Jeffrey B. Braziel, Travelers Rest, S.C., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 16, 1983, Ser. No. 523,801
Int. Cl.³ B23Q *3/00*
U.S. Cl. 29—283.5 **6 Claims**



1. Package stripping apparatus comprising, in combination, a package stripping station for stripping linear material from a plastic forming tube package, means supporting the forming tube package at the stripping station, means at the stripping station engageable with the package for collapsing the forming tube rendering the linear material in a loose hank on the collapsed forming tube, a stripper member, means for retracting the support means from the collapsed forming tube package at the stripping station, means for moving the collapsed forming tube away from the stripping station whereby the stripper member engages the loose hank of material on the collapsed forming tube for stripping the loose hank of material from the forming tube during movement of the forming tube away from the stripping station.

4,498,222

CLINCHING PROCESS OF BUCKLE BASE AND WIRE ROPE

Katsuyasu Ono, Kanagawa, and Tomosaburo Sato, Saitama, both of Japan, assignors to NSK-Warner K.K., Japan

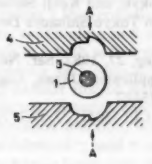
Filed Jun. 2, 1983, Ser. No. 500,443
Claims priority, application Japan, Jun. 20, 1982, 105697
Int. Cl.³ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—509 **4 Claims**

1. A process for clinching a wire rope on a buckle base, which process comprises the following consecutive steps:

subjecting a starting anchor block metal sleeve and the wire rope in combination to a first clinching plastic deforming operation to form a preformed anchor block bearing steps extending up radially outwardly thereon; and

subjecting the preformed anchor block and the buckle base in combination to a second clinching plastic deforming operation to clinch the resultant anchor block on the

buckle base, which second clinching operation is applied in a direction at an angle or angles substantially different



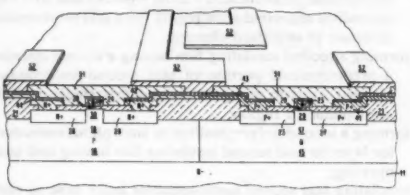
from the first clinching operation to scatter the resulting stresses.

4,498,223

METHOD OF FABRICATION OF MONOLITHIC INTEGRATED CIRCUIT STRUCTURE

Ernest A. Goldman, Stow; Jeremiah P. McCarthy, Framingham, and Paul E. Poppert, Acton, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 23, 1982, Ser. No. 371,326
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **4 Claims**



1. The method of fabricating monolithic integrated circuit structure incorporating complementary field effect transistors comprising

providing a body of semiconductor material having a first section of one conductivity type and a second section of the opposite conductivity type at a surface of the body with a first sector within said first section and a second sector within said second section covered by an adherent gate layer of insulating material, the portions of the surface of the body contiguous with said first and second sectors being covered by an adherent field layer of insulating material thicker than the gate layer of insulating material;

placing a first gate member of semiconductor material of low resistivity over a portion of the gate layer of insulating material overlying a channel region with said channel region lying between two remaining regions of said first sector, and a second gate member of semiconductor material of low resistivity over a portion of the gate layer of insulating material overlying a channel region of said second sector with said channel region lying between two remaining regions of said second sector;

introducing conductivity type imparting material of the opposite conductivity type into the two remaining regions of said first sector and introducing conductivity type imparting material of the one conductivity type into the two remaining regions of said second sector;

converting the outer surfaces of the first and second gate members except at the interface with the underlying gate layer of insulating material to adherent insulating material and increasing the thickness of the gate layer of insulating material overlying the remaining regions of the first and second sectors to form a field layer;

removing a portion of the field layer of insulating material overlying each of the remaining regions of the first and second sectors to expose a surface area in each of said remaining regions;

forming adherent contact members of semiconductor material of the opposite conductivity type of low resistivity on and in ohmic contact with the exposed surface areas of the two remaining regions of the opposite conductivity type in said first sector extending over the field layer of insulating material, and forming adherent contact members of semiconductor material of the one conductivity type of low resistivity on and in ohmic contact with the exposed surface areas of the two remaining regions of the one conductivity type in said second sector extending over the field layer of insulating material, one of the contact members of semiconductor material of the one conductivity type being contiguous with one of the contact members of semiconductor material of the opposite conductivity type at a junction; and

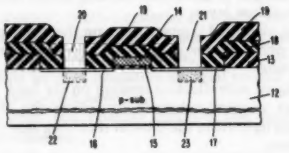
forming an adherent layer of highly conductive material on and in ohmic contact with the one contact member of semiconductor material of the one conductivity type and on and in ohmic contact with the one contact member of semiconductor material of the opposite conductivity type in the regions of the contact members in which the one contact member of semiconductor material of the one conductivity type and the one contact member of semiconductor material of the opposite conductivity type are contiguous thereby shorting out the rectifying junction between the one contact member of semiconductor material of the one conductivity type and the one contact member of semiconductor material of the opposite conductivity type.

4,498,224

METHOD OF MANUFACTURING A MOSFET USING ACCELERATED IONS TO FORM AN AMORPHOUS REGION

Kenji Maeguchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 24, 1982, Ser. No. 544,991
Claims priority, application Japan, Dec. 23, 1982, 57-232508
Int. Cl.³ H01L *21/425*
U.S. Cl. 29—571 **8 Claims**



1. A method for manufacturing semiconductors of the MOSFET type comprising the steps of:

forming a gate insulation layer and a gate electrode on a

selected portion of a semiconductor body of single crystal material having a first conductivity type;

introducing impurities of a second conductivity type into a preselected region of the semiconductor body using the gate electrode as a mask;

introducing accelerated ions to overlap at least a portion of the region in which the impurities are introduced, wherein a fraction of the accelerated ions is introduced deeper than the impurities, said accelerated ion introducing step converting the crystal material of said semiconductive body portion into an amorphous state;

forming a diffused region by diffusion of the second conductivity type impurities from said preselected region; and

forming an electrode to contact the diffused region.

4,498,225

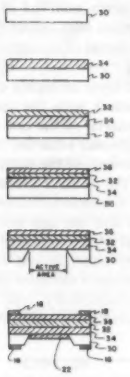
METHOD OF FORMING VARIABLE SENSITIVITY TRANSMISSION MODE NEGATIVE ELECTRON AFFINITY PHOTOCATHODE

William A. Gutierrez, and Herbert L. Wilson, both of Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 260,959, May 6, 1981,. This application Oct. 20, 1983, Ser. No. 522,768

Int. Cl.³ H01L *31/18*

U.S. Cl. 29—572 **5 Claims**



1. A method of forming a variable photosensitivity transmission mode negative electron affinity photocathode for varying the luminous sensitivity about the white and monochromatic light wavelengths by varying the backsurface recombination velocity in said photocathode, the steps of forming said photocathode comprising:

providing a large bandgap single crystal transparent window substrate having an epitaxially grown wide bandgap semiconductor window layer thereon containing sufficient chromium or oxygen therein so as to be semi-insulating;

epitaxially growing a photoemitter layer on said semiinsulating window layer;

layering electrical contact rings on the outer peripheries of said photoemitter layer and said transparent window substrate;

applying an antireflection coating on the back of said transparent window substrate to reduce the amount of reflected light from the photon receiving side of said photocathode;

activating said photoemitter layer to bring about a condition of negative electron affinity; and

biasing said photocathode into operation by applying a bias supply voltage to said electrical contact rings to modulate an electric field effect in said photocathode.

4,498,226

METHOD FOR MANUFACTURING THREE-DIMENSIONAL SEMICONDUCTOR DEVICE BY SEQUENTIAL BEAM EPITAXY

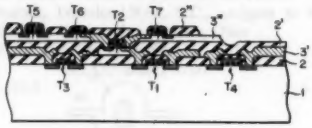
Tomoyasu Inoue, Tokyo, and Kenji Shibata, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 27, 1982, Ser. No. 412,241

Claims priority, application Japan, Aug. 31, 1981, 56-135421; Aug. 31, 1981, 56-135422

Int. Cl.³ H01L *21/263, 21/225*

U.S. Cl. 29—576 B **8 Claims**



1. A method for manufacturing a three-dimensional semiconductor device comprising the steps of:

forming first and second semiconductor elements on the surface of a single-crystalline semiconductor substrate;

forming a first insulating film on said substrate;

forming a first opening in said first insulating film at a predetermined portion of said first semiconductor element;

forming a first polycrystalline or amorphous semiconductor layer on said first insulating film having said first opening;

irradiating said first semiconductor layer with an energy beam to grow a single crystal in a predetermined region in said first semiconductor layer using as a seed crystal that part of said semiconductor substrate which contacts said first semiconductor layer and to form a first single-crystalline semiconductor region;

forming at least a part of a third semiconductor element in said first single-crystalline semiconductor region;

forming an interconnection between said first and third semiconductor elements by using a part of said first single-crystalline semiconductor region from said semiconductor substrate to said third element;

forming a second insulating film having a second opening at a predetermined portion of said second semiconductor element so as to elongate on said first single-crystalline semiconductor region;

forming a second polycrystalline or amorphous semiconductor layer on said second insulating film having said second opening;

irradiating said second semiconductor layer with an energy beam to grow a single crystal at a predetermined region in said second semiconductor layer using as a seed crystal that part of said semiconductor substrate which contacts with the second semiconductor layer and to form a second single-crystalline semiconductor region; and

forming a remaining part of said third semiconductor element and forming an interconnection between said second and third semiconductor elements by using a part of said second single-crystalline semiconductor region from said semiconductor substrate to said third semiconductor element.

4,498,227

WAFER FABRICATION BY IMPLANTING THROUGH PROTECTIVE LAYER

Paul J. Howell, Gray, and Gregory B. Currier, Yarmouth, both of Me., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Jul. 5, 1983, Ser. No. 510,761

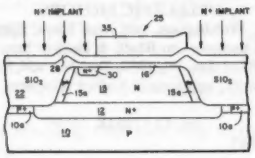
Int. Cl.³ H01L *21/265, 21/318*

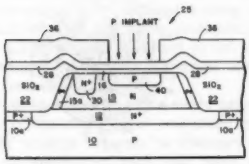
U.S. Cl. 29—576 B **20 Claims**

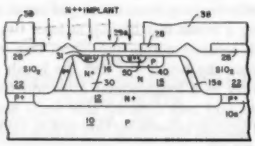
1. A method for fabricating a bipolar substantially isoplanar

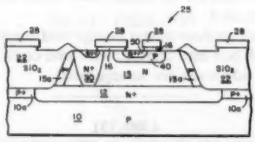
integrated circuit structure on a substrate of semiconductor material of a first conductivity type, said substrate being processed by depositing an epitaxial layer of semiconductor material over the substrate thereby forming an isolation junction extending laterally through the structure between the epitaxial layer and substrate, forming a thin epitaxial oxide buffer layer over the epitaxial layer, subdividing said structure into a plurality of epitaxial islands in which active and passive elements are fabricated, and isolating said epitaxial islands relative to each other by forming annular shaped isolation oxide regions of oxidized semiconductor material extending through the epitaxial layer to the isolation junction, wherein the improvement in the method of fabricating said structure comprises:

depositing a uniform nitride layer over the structure thereby passivating the structure and protecting the isolation oxide regions, epitaxial oxide buffer layer and epitaxial layer from contaminants;









implanting collector sink regions in the epitaxial islands by selectively directing a beam of ions of second conductivity type through the nitride layer and epitaxial oxide buffer layer into the epitaxial layer at collector sink region surface locations;

retaining the nitride layer and epitaxial oxide buffer layer in place as a barrier to environmental contaminants;

implanting base regions in the epitaxial islands by selectively directing a beam of ions of first conductivity type through the nitride layer and epitaxial oxide buffer layer into the epitaxial layer at base region surface locations before implanting emitter regions;

retaining the nitride layer and epitaxial oxide buffer layer in place as a barrier to environmental contaminants;

forming a self-aligned transistor mask pattern over the nitride layer for defining the surface locations of collector sink, base and emitter regions in self-alignment relative to each other on the epitaxial islands through openings in the self-aligned transistor mask pattern;

etching the underlying nitride layer through the openings in the self-aligned transistor mask pattern and removing the nitride layer at the surface locations of the collector sink, base and emitter regions while retaining the epitaxial oxide buffer layer in place as a barrier to environmental contaminants;

removing the self-aligned transistor mask pattern, retaining the unetched remainder of the nitride layer in place, and retaining the epitaxial oxide buffer layer in place at the surface locations where the nitride layer was removed by etching;

implanting emitter regions in base regions previously implanted in the epitaxial islands by selectively directing a beam of ions of second conductivity type through the epitaxial oxide buffer layer into the epitaxial layer;

simultaneously annealing the implanted collector sink, base and emitter regions thereby providing a substantially isoplanar integrated circuit structure of active and passive elements in the epitaxial islands separated by said isolation oxide regions.

4,498,228

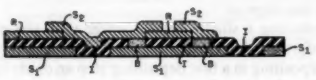
METHOD OF MANUFACTURING JOSEPHSON JUNCTION INTEGRATED CIRCUITS

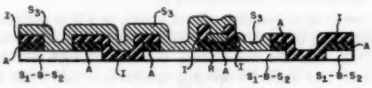
Don W. Jillie, Jr., Arlington, and Lawrence N. Smith, Lexington, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Division of Ser. No. 252,528, Apr. 9, 1981, Pat. No. 4,430,662. This application Nov. 14, 1983, Ser. No. 550,847

Int. Cl.³ H01L *21/479, 21/48*

U.S. Cl. 29—577 C **21 Claims**





1. A method of fabricating a superconductive integrated circuit including at least one Josephson tunnel junction, said tunnel junction including first and second tunnel junction electrodes superposed with respect to each other with a Josephson tunneling barrier therebetween for conducting Josephson tunneling current between said first and second tunnel junction electrodes, said method comprising the steps of

forming a ground plane for said integrated circuit and forming said first tunnel junction electrode by depositing a first layer of superconductive material on a substrate, said first layer comprising said ground plane as well as including said first tunnel junction electrode,

forming a first layer of insulative material on said first layer of superconductive material,

forming at least one opening through said first layer of insulative material,

forming said Josephson tunneling barrier within said opening in said layer of insulative material, and

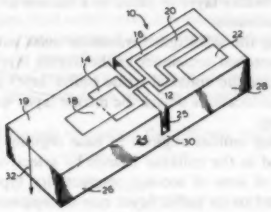
depositing a second layer of superconductive material on said layer of insulative material, said second layer including said second tunnel junction electrode.

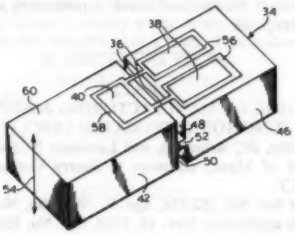
4,498,229

PIEZORESISTIVE TRANSDUCER

Leslie B. Wilner, Palo Alto, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Oct. 4, 1982, Ser. No. 432,620
Int. Cl.³ H01L *41/08*; G01L *1/22*
U.S. Cl. 29—580 **8 Claims**





1. A process for producing a strain sensitive element, comprising the steps of

(a) selecting a silicon crystal wafer with the plane of said wafer oriented (110);

(b) depositing in a first depositing step an oxide layer on both sides of said wafer selected from said selecting step;

(c) establishing coordinated indices on both sides of said wafer obtained from said depositing step;

the improvement characterized by

(d) on at least one side of said wafer, in a first defining step, defining on said oxide layer unsupported gages indexed [111] and the conductors therefore which are integral with said wafer by opening apertures in said oxide deposit corresponding to said defined gages and conductors;

(e) said defining step for each strain sensitive element providing for at least one groove over which said integral gages will extend;

(f) said defining step defining the entire bodies of said integral gages as being the only material extending over said groove without any separate support;

(g) said groove dividing each said strain sensitive element into two parts with an integral hinge portion extending therebetween;

(h) said integral hinge portion being spaced from said unsupported integral gages;

(i) depositing in a second depositing step boron into said apertures from said first defining step;

(j) subjecting said wafer to sufficiently elevated temperatures for a sufficient period of time to anneal said wafer;

(k) opening an etching pattern on at least one side of said wafer to define said groove to be formed in said wafer over which said defined gages will extend and through which said integral hinge portion will extend;

(l) said etching step being to a depth within the range of between about 0.0022 inches and 0.005 inches to undercut said defined gages, and form said defined groove;

(m) said etching step being carried out to a point short of piercing said wafer for defining said hinge portion;

(n) stripping from said wafer all residual oxide;

(o) depositing in a third depositing step a thin oxide layer on said wafer to protect all positive-negative junctions thereon;

(p) depositing in a fourth depositing step a metallic layer on at least one side of said wafer;

(q) defining in a second defining step, said conductors for said gages in said metallic layer; and

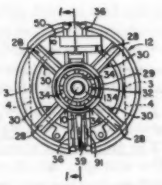
(r) cutting said wafer into strain sensitive elements containing said defined gages, conductors, groove or grooves, and hinge.

4,498,230

ASSEMBLING BRUSH BOX SUB-ASSEMBLIES IN ELECTRIC MOTORS

David Harris, Wolsingham, and Alan Hays, Spennymoor, both of England, assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 10, 1983, Ser. No. 456,701
Claims priority, application United Kingdom, Jan. 8, 1982, 8200514
Int. Cl.³ H02K *15/00*
U.S. Cl. 29—597 **3 Claims**



1. A method of assembling a brush box sub-assembly in an electric motor having a commutator, said brush box sub-assembly comprising a brush box having at least two opposed side walls, a brush located within the brush box, resilient means stressed between the brush box and the brush for urging the brush outwardly in a longitudinal direction from within the brush box, and said two opposed side walls being stressed to grip and hold against movement said brush, said method comprising the steps of:

inserting the brush box into said motor;

separating said opposed side walls sufficiently as the brush box is so inserted to enable said brush to move in said brush box; and

allowing said resilient means to urge said brush outwardly of said brush box into contact with said commutator as said opposed side walls are so separated.

4,498,231

THIN FILM STRAIN TRANSDUCER

James L. Rand, San Antonio, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

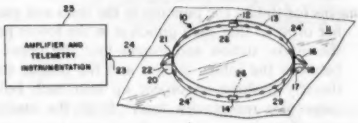
Division of Ser. No. 352,827, Feb. 26, 1982, Pat. No. 4,425,808. This application Aug. 26, 1983, Ser. No. 526,770
Int. Cl.³ H01C *17/00*
U.S. Cl. 29—610 SG **2 Claims**

1. A method of making a thin film strain transducer for use in accurately measuring strain on thin films comprising:

(a) providing a thin sheet or beryllium-copper alloy stock in the half-hard condition;

(b) drawing a pattern of a one-half segment four times the dimensions of the final product and consisting of an elongated strip provided with twelve equal diameter and uniformly spaced holes and a pair of tab portions;

(c) photographically reducing this pattern to produce a negative of the actual size desired;
(d) transferring this negative image to the beryllium-copper alloy sheet;
(e) making the image and immersing the sheet in a chemical solution to chem-mill the excess material away from the masked pattern to recover an elongated strip of material and a pair of semicircular tab elements;
(f) repeating steps (b), (c), (d) and (e) to recover identical pattern portions;
(g) bending the identical elongated strips to form a pair of semicircular segments and with bent gusset extensions on each end thereof;
(h) spot welding the pair of semicircular strips to form a ring and spot welding a pair of the semicircular tab elements to



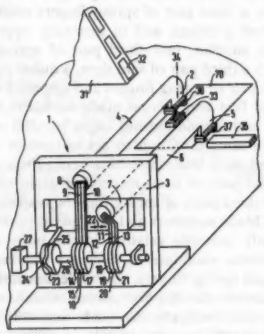
the gussets extending from each strip to form a double layered tab;
(i) placing the assembled ring and tab structure onto a mandrel having essentially the same thermal characteristics as the beryllium-copper alloy and heat treating this assembly for approximately two hours at approximately 315° C. to change the alloy from the half-hard to full strength;
(j) electrochemically removing the oxide coating formed during the heat treating process;
(k) bonding four identical precision strain gages to the ring with a pair of the strain gages positioned each at essentially the 90° stations between the diametrically disposed tabs and one member of each pair being on the outer surface of the ring; and
(l) electrically connecting each strain gage in Wheatstone bridge circuit arrangement to output instrumentation.

4,498,232

AUTOMATIC INSERTION AND REMOVAL DEVICE FOR COMPONENTS

Wilhelm Ertl, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,286
Claims priority, application Fed. Rep. of Germany, May 18, 1981, 3119686
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—741 **11 Claims**



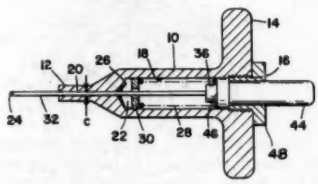
1. Automatic insertion and removal device for components, comprising a supply container for the components, a holding device for the components, an insertion head for taking the components from said supply container and inserting the components into said holding device, a removal head for removing the components from the holding device and for passing the components on, and a cam control connected to said heads for providing a motion cycle for said heads, said cam control including opening cams, opening levers being actuatable by said opening cams and opening push rods being actuatable by said opening levers, and each of said heads including pliers facing a component, said pliers being actuatable by said opening push rods for gripping the component.

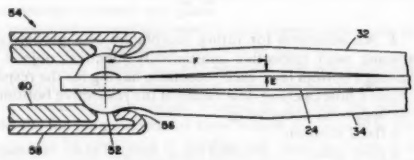
4,498,233

RETRIEVAL TOOL FOR SOCKET CONTACTS

Charles C. Simms, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1982, Ser. No. 412,420
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—747 **2 Claims**





1. An apparatus for seating a socket contact in an electrical connector from the front side of the connector, which comprises:
(a) a pair of elongated, parallel, opposing, flexible fingers for insertion into said socket contact, the outside surface of the ends of said fingers being shaped to internally grasp the socket contact when said fingers are forced apart, said fingers having an inward bend near the ends which allows the ends of the fingers to come together so that the fingers may be inserted into the socket contact;
(b) a housing having a central bore including an interior section leading to a narrow output section through which said fingers extend out of said housing for insertion into said socket contact;
(c) a wedge member disposed between said fingers, said wedge member being fixed relative to said housing and having a blade section which extends through said narrow output section out of said housing;
(d) means for extending said fingers beyond the end of said wedge member and for retracting said fingers so that said wedge member extends beyond the ends of said fingers, said means for extending and retracting comprising:
(1) plunger means slidable in the interior section of said central bore, said fingers being coupled to said plunger means so that said fingers are extended by depressing said plunger means,
(2) spring means disposed in the interior section of said central bore for opposing the depression of said plunger means to retract said fingers, whereby the extension of said fingers allows said fingers and said wedge to be

inserted into said socket contact whereupon the retraction of said fingers causes the wedge member to force apart said fingers to internally grasp said socket contact so that said fingers may be pulled to seat the contact.

4,498,234

AUTOMATIC APPARATUS FOR FITTING OBJECTS INTO RECEPTACLES

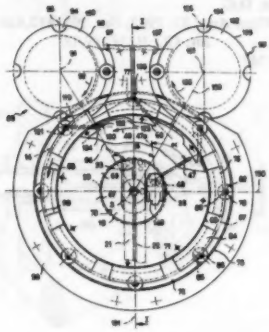
Bernard P. Greslin, Rixheim, and Daniel J. Rohmer, Herrlisheim, both of France, assignors to Manufacture de Machines du Haut-Rhin, Mulhouse, France

Filed Jan. 20, 1983, Ser. No. 459,681

Claims priority, application France, Jan. 20, 1982, 82 00801

Int. Cl.³ B23P *21/00*; B21D *51/54*; F42B *7/02*

U.S. Cl. 29—785 **11 Claims**



1. An apparatus for fitting receptacles at a predetermined spacing with respective substantially identical objects each having a bottom face, each rececticle having for the respective object a hole opening downward at the respective bottom face, the apparatus comprising:

a fixed support;

a plate generally centered on an upright plate axis and having a substantially planar, smooth, and horizontal upper face with a generally circular outer edge;

means for rotating the plate relative to the fixed support in a predetermined direction about the plate axis;

means for depositing the objects on the upper face of the plate radially inward of the edge thereof such that these objects sit on this upper plate face by their bottom faces;

means forming a plurality of individual seats distributed at the spacing of the receptacles along the outer edge of the upper face of the plate and each having a floor coplanar with the upper plate face and a shape complementary with that of one of the objects;

a guide member having an inner edge above the upper face of the plate immediately adjacent same, and a plurality of respective passages which each open at one end at this inner edge and at the other end at the respective seat, each such passage being so dimensioned that the objects can pass one by one from the inner edge to the respective seat;

means for exerting on the objects a radially outwardly directed force urging them toward the outer edge of the face and toward the seats via the passages of the guide member, the means for exerting including:

means for rotating the plate about the plate axis at such a speed that the resultant centrifugal force moves the objects radially outward, and

means for rotating the seats and the guide member about the plate axis opposite to the predetermined direction relative to the plate;

means including respective receptacle holders fixed relative to the seats and to the guide member for temporarily holding a respective receptacle above each seat in a position in which this receptacle is positioned with its hole for the object as an upper extension of the seat, these holders and their receptacles therefore orbiting about the plate axis as the plate rotates thereabout;

means for feeding the receptacles to the holders and means for taking the receptacles from the holders at respective intake and output stations along the outer plate edge during rotation of the seats and guide member;

respective punches at the seats in vertical alignment therewith, each punch being vertically slidable relative to the respective seat and to the guide member and having a substantially planar upper end movable between an upper position in which it is coplanar with the upper face of the plate to define the floor of the respective seat and a lower position in which it lies above the upper face of the plate; and

means for sliding the punches as the seats and guide member orbit so that each punch is in the lower position in the intake station and moves into the upper position between the intake station and the output station for thereby pushing an object up into each hole as the respective receptacles travel from the intake to the takeoff stations.

4,498,235

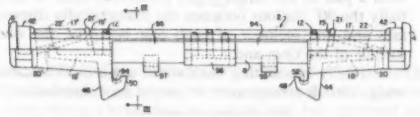
RAZOR BLADE ASSEMBLY

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 419,202, Sep. 17, 1982,. This application Aug. 2, 1983, Ser. No. 519,565

Int. Cl.³ B26B *21/22*

U.S. Cl. 30—47 **1 Claim**



1. A razor blade assembly comprising a body member having first and second end portions interconnected by front and back wall portions, first and second frame portions interconnecting said front and back wall portions, said end portions having therein opposed slots, a first pair of spring fingers extending outwardly from said frame portions parallel to said front and back wall portions and in opposite directions, said fingers being aligned with a first pair of said slots, a second pair of spring fingers extending inwardly from said end portions, and in generally opposite directions toward one another, said second pair of spring fingers being aligned with a second pair of said slots, a third pair of spring fingers extending inwardly from said end portions, and in generally opposite directions toward one another, said third pair of spring fingers being aligned with a third pair of said slots, a quard portion mounted on said first pair of spring fingers and disposed in said first pair of slots, and first and second blade members having, respectively, first and second cutting edges parallel with each other and facing a same direction to act in tandem upon a surface being shaved, said blade members being disposed in said second and third pairs of slots, respectively and resting upon said second and third pairs of spring fingers, respectively, said first and second blade members and said guard portions each being independently movable relative to the body member in response to forces encountered during a shaving operation by flexure of said spring fingers, the blade assembly having pivot mounting means thereon for pivotal attachment to a razor handle assembly, whereby the blade assembly, as a whole, is pivotally movable on said handle assembly in response to forces encountered during the shaving operation, and cam means disposed on an underside of said body member and adapted to receive a cam follower mounted on said razor

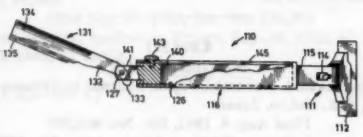
handle to maintain maximum contact between said surface being shaved and said independently movable first and second blade members and guard portion.

4,498,236

SHAVING INSTRUMENT COMPLEX

Marvin H. McIntyre, and Ernest L. McIntyre, both of 410 S. 2nd St., Caseyville, Ill. 62232

Filed Sep. 22, 1982, Ser. No. 421,301
Int. Cl.³ B26B *21/08*
U.S. Cl. 30—34.1 **4 Claims**



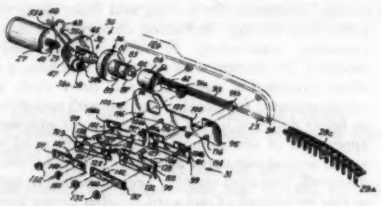
1. A compound shaving instrument comprising, in combination: an elongated main handle member having first and second opposite ends and a hollow internal chamber therebetween; safety razor means mounted on the first end of said handle member and including a shaving head that is permanently attached to the first end, and replaceable razor blade means having a cutting edge and being removably held by said shaving head in a position guarding the cutting edge against unrestricted cutting contact with a user; and straight razor means movably mounted on the second end of said handle member and including integrally formed shank and blade portions, said blade portion being carried on one end of said shank portion and having an exposed and unguarded cutting edge during use, said shank portion having a pivotal mounting connection adjacent to its other end for swinging movement to carry said integral blade portion to various angular positions relative to said handle member for shaving purposes; and said internal chamber of said handle member forming a housing to accommodate and store said blade portion of said straight razor means during non-use thereof, whereby said safety razor means and said straight razor means are selectively usable from opposite ends of the same handle member for obtaining an optimum total shave.

4,498,237

HAIR TRIMMER

William Mack, Commack, N.Y.; Herbert Morrison, Trumbull, and Frank Chiapetta, Woodbury, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Jan. 18, 1983, Ser. No. 459,009
Int. Cl.³ B26B *19/02, 19/20*
U.S. Cl. 30—200 **11 Claims**



1. A cutting unit comprising:

a cutting assembly including multiple sets of tandem arcuate blades, said multiple sets being longitudinally aligned and arranged in order to conform the cutting surfaces of all sets along a single substantially arcuate path, each set comprising opposing first and second toothed arcuate blades, each said first toothed arcuate blade bearing against and longitudinally slidable along the corresponding second toothed arcuate blade in a longitudinally reciprocating cutting motion, said first blades of each set being coupled for simultaneous longitudinal reciprocating motion relative to the corresponding second blades of each set; and

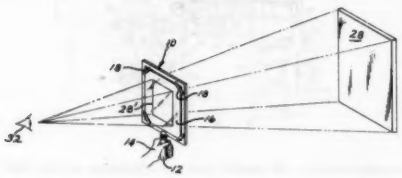
reciprocating means for producing said longitudinal reciprocating motion of all said first blades simultaneously.

4,498,238

TRANSPARENT PERSPECTIVE TRACING BOARD

James N. Vaughn, Georgetown, Ind., assignor to Richard L. Caslin, Louisville, Ky.

Filed Sep. 30, 1982, Ser. No. 429,949
Int. Cl.³ B44D *2/00*
U.S. Cl. 33—1 K **1 Claim**



1. A transparent perspective hand-held tracing board adapted for use with a sheet of transparent drawing material that is to be attached to the front surface thereof, said tracing board comprising:

a. a rigid panel of transparent material taken from the group consisting of plastic and glass:

b. a measured pattern imprinted on the transparent panel to assist in judging distance and relative angles:

c. a supporting handle secured adjacent one side edge and extending from the transparent panel, the handle providing mechanical advantage to assist in holding the panel steady for long periods of time, where the handle is for grasping by one hand in holding the panel in space at a predetermined angle and distance in front of a user, and an object at a distance may be sighted through the transparent panel and positioned within the measured pattern on the panel so that the said object can then be traced by the user's other hand with a drawing instrument that is capable of leaving a mark, wherein the said supporting handle is mounted on the lower edge of the transparent panel, and it includes a universal socket for providing angular adjustablity between the handle and the panel.

4,498,239

FEELER GAGE MOUNTING SYSTEM

Harry Epstein, Seaford, N.Y., assignor to Kastar, Inc., Bellport, N.Y.

Filed May 19, 1983, Ser. No. 491,368
Int. Cl.³ G01B *3/32*
U.S. Cl. 33—168 R **9 Claims**

1. A feeder gage mounting system comprising in combination:

a case having a pair of flexible opposed walls,

a pin including an elongated pin body having opposed first and second ends,

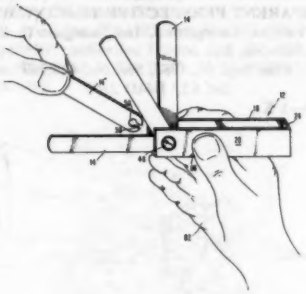
said first end being non-rotatably affixed to one of said walls,

means for connecting said second end of said pin body to the other of said walls and for flexing said other wall towards said one wall whereby said opposed walls are pressed against said plurality of blade members, and

a plurality of blade members, each of said blade members being a flat, elongated member having opposed blade end portions, each said blade member forming an approximately circular hole spaced proximate to one of said blade

end portions, said hole being adapted to accept said elongated pin body in rotatable association, each of said blade members forming a slot joining said one end portion and said circular hole adapted to pass said pin body into a rotatable connection with said blade members at said hole and from rotatable connection with said blade members at said hole,

said elongated pin body having a first pair of opposed sides spaced apart at a maximum first distance joining a second



pair of opposed sides spaced apart at a second distance, said second pair of sides being planar, said first distance being greater than said second distance, said first distance being slightly less than the diameter of said hole,

said slot having opposed planar surfaces spaced apart at a third distance slightly greater than said second distance and less than said first distance of said opposed sides of said pin body,

whereby said pin body can be slid into and from said circular hole.

4,498,240

SEAM-DETECTING DEVICE FOR INTERCONNECTED SECTIONS OF SHEET MATERIAL

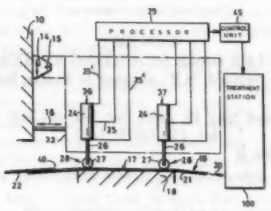
Alfonsius A. J. Van Dijk, St. Odilienberg, Netherlands, assignor to Johannes Menschner Maschinenfabrik GMBH & Co. KG, Viersen, Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 493,918

Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217815

Int. Cl.³ G01B 7/06

U.S. Cl. 33—147 L **12 Claims**



11. In an apparatus for the continuous advancement of a web of consecutive sections of sheet material, overlappingly interconnected by generally transverse seams of greater thickness, through a treatment station,

the combination therewith of a seam detector comprising:

a support with a flat surface underlying the path of said web;

a first, a second and a third thickness sensor fixedly disposed above said support and provided with mobile contactors engageable with an upper surface of a section of sheet material passing over said support, each of said sensors including a generator of variable voltage depending on the position of the respective contactor, said first and second sensors being spaced apart in the direction of advancement, said first and third sensors being spaced apart in a direction transverse to the direction of advancement; and

processing means connected to said sensors for signaling the presence of a seam in response to similar voltage changes generated by said first and third sensors within a predetermined interval of each other, indicative of increases in web thickness along a generally transverse line, unaccompanied by a compensatory voltage change generated by said second sensor.

4,498,241

HEIGHT GAUGE

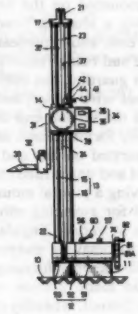
Tokuzo Nakaoki, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1982, Ser. No. 405,005

Claims priority, application Japan, Aug. 10, 1981, 56-118472[U]; Sep. 14, 1981, 56-145046; Sep. 14, 1981, 56-145047

Int. Cl.³ G01B 5/00

U.S. Cl. 33—172 R **13 Claims**



1. A height gauge comprising:

a base;

a plurality of elongated supports extending away from said base, said supports having lower ends located close to said base and upper ends located remote from said base;

a tilting mechanism mounted on said base, the lower ends of said supports being connected to said tilting mechanism whereby said supports can be tilted with respect to said base;

a slider movably supported on said supports;

an indicating device for measuring the displacement of said slider along said supports;

a driving mechanism for moving said slider along said supports, said driving mechanism comprising a drive shaft extending transversely to said supports and being mounted for rotation with respect to said base, a control wheel provided at one end of said drive shaft, a lower pulley mounted for integral rotation with said drive shaft, an upper pulley mounted on said supports adjacent to the upper ends of said supports, and a flexible cord member would around said upper and lower pulleys for movement therewith, said cord member being attached to said slider so that movement of said cord member causes movement of said slider along said supports;

a fine adjustment mechanism for driving said driving mechanism at a low speed to move said slider along said supports at a low speed, said fine adjustment mechanism including a large diameter gear which is stationary with respect to said base and has a central hole therein, said drive shaft extending through said central hole and being rotatable therein, a shiftable pinion which can selectively be moved

into meshing engagement with said gear, and a finger grip mounted on said control wheel and connected for integral rotation with said pinion, said finger grip being movable in a direction parallel to the lengthwise direction of said drive shaft to bring said pinion into and out of meshing engagement with said gear.

4,498,242

DEVICE FOR POSITION-CHECKING OF THE SHOCK-ABSORBER HEADS OF A FRONT VEHICLE SUSPENSION SYSTEM

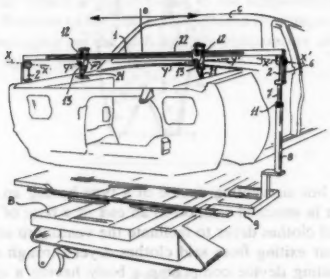
Germain Celette, Vienne, France, assignor to Celette S.A., Vienne, France

Filed Sep. 27, 1983, Ser. No. 536,396

Claims priority, application France, Sep. 30, 1982, 82 16439; Sep. 15, 1983, 83 14670

Int. Cl.³ G01B *5/25*

U.S. Cl. 33—180 AT **13 Claims**



1. A device for checking the positions of shock-absorber heads of a front vehicle suspension system of the McPherson type, wherein said device comprises:

a horizontal cross-beam which is intended to be placed above the front end of the vehicle to be checked and the ends of which are mounted so as to be capable of pivotal displacement about a transverse horizontal axes defined by two lateral support brackets;

means cooperating with the lateral support brackets for supporting said cross-beam;

two sliders slidably mounted on said cross-beam and carrying a control arm which is capable of pivotal displacement about an axis disposed in the longitudinal direction and the lower end of which is intended to be placed opposite to the center of the head of either of the two corresponding shock-absorbers;

separate graduated scales which make it possible after this coincident position-setting operation to determine the angle of relative forward or backward displacement of the cross-beam with respect to its lateral support brackets as well as the angle of outward or inward inclination of the control arms of the sliders.

4,498,243

MOTOR VEHICLE CENTERING SYSTEM

Hiroo Kashiwagi, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 19, 1983, Ser. No. 459,267

Claims priority, application Japan, Jan. 22, 1982, 57-7703[U]

Int. Cl.³ G01B *5/255*

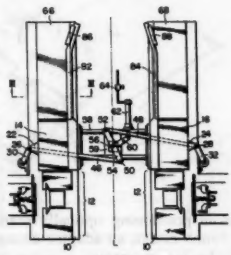
U.S. Cl. 33—203.12 **9 Claims**

1. A motor vehicle centering system for centering a motor vehicle having pairs of wheels, comprising:

a. a stationary frame;

b. a pair of first tread-boards extending along and on both sides of a center line between said first tread-boards, each of said first tread-boards having a width wider than the width of said wheels, said first tread-boards separated laterally by a distance corresponding to the approximate lateral distance between said wheels, and each of said first tread-boards being laterally movably mounted on said frame;

c. a pair of wheel guides symmetrically positioned on opposite sides of said center line for moving said wheels which contact said first tread-boards into positions symmetrical relative to the center line, each of said wheel guides being laterally movably mounted on said frame;



d. link means mounted on said frame for maintaining said pair of wheel guides symmetrical relative to said center line and allowing said wheel guides to move symmetrically laterally; and

e. driving means for driving said link means to move said wheel guides and push wheels in contact with said first tread-boards to positions symmetrical relative to said center line.

4,498,244

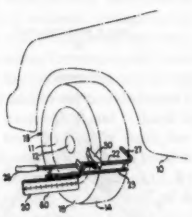
TARGET INCLUDING SLIDING SCALE

Roy B. Bendickson, and Alfred A. Wridt, both of Racine, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Oct. 14, 1983, Ser. No. 542,260

Int. Cl.³ G01B *7/315*

U.S. Cl. 33—203.15 **25 Claims**



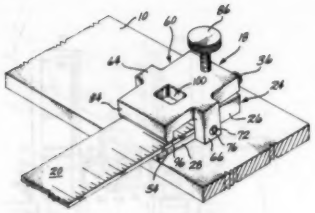
1. A target for use in equipment for aligning a vehicular wheel which carries a tire thereon having a tread surface and a pair of side walls, said target comprising an elongated body, first and second jaws depending from said body for respectively engaging the side walls of the tire, at least one of said jaws being movable toward and away from the other of said jaws, first means for latching said jaws at a selected spacing therebetween so as to be mounted on the tire, scale means slidably carried by said body, and second means for latching said scale at a selected position on said body.

4,498,245

ADAPTOR FOR CLAMPING OPTICAL SCALE ON TOOLING BUTTON

Robert B. Mayor, Sumner, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 30, 1983, Ser. No. 509,663
Int. Cl.³ G01C *21/00*
U.S. Cl. 33—286 **14 Claims**



1. For use in positioning optically read scales on tooling button-type bench marks, an adaptor clamp comprising:

a first plate having an opening adjacent one end to receive a tooling button;

means attached to said first plate to secure said first plate on said button;

a flat surface portion of said first plate spaced from said one end and being adjacent an inner peripheral portion of said opening spaced from said one end;

a cutaway portion adjacent said flat surface and at said inner peripheral portion of said opening to align said flat surface with a button in said opening so that a scale on said flat surface may abut a peripheral surface portion of said button complementary to said opening when the scale and peripheral surface portion are within the cutaway portion;

means pivotally engaging a second plate to said first plate; and

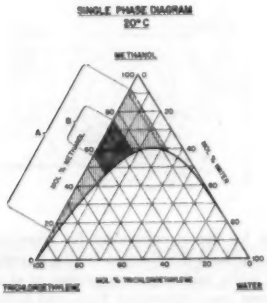
means on said second plate to pivot one end thereof toward said flat surface of said first plate for clamping a scale thereon in abutment with said tooling button.

4,498,246

ALCOHOL/HEAVY LIQUID DRYING OF COAL

Terry S. Cantu, Ponca City, Okla., and Mark C. Williams, Berkeley, Calif., assignors to Conoco Inc., Ponca City, Okla.

Filed Sep. 22, 1983, Ser. No. 535,003
Int. Cl.³ F26B *3/00*
U.S. Cl. 34—9 **10 Claims**



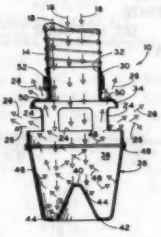
1. A method for removing water from coal containing water comprising contacting said coal with a solution of an alcohol containing from 1 to 3 carbon atoms and an organic liquid, said solution having a specific gravity in the range of from about 1.2 to about 1.4, at a temperature sufficiently high to retain said alcohol and organic material in a single continuous phase and for a time sufficient to remove water from the coal, then separating the coal from the alcohol/organic solution and water.

4,498,247

VENT ATTACHMENT FOR A HOT AIR CLOTHES DRYER

Peter J. Benevento, West Hempstead, N.Y., assignor to Lambro Industries, Inc., Amityville, N.Y.

Continuation of Ser. No. 402,206, Jul. 26, 1982, abandoned. This application Jul. 19, 1984, Ser. No. 632,550
Int. Cl.³ F26B *11/04*
U.S. Cl. 34—82 **1 Claim**



1. A hot air venting device of a type having an operative position in attached relation to an end of a hose of a hot air-operated clothes dryer to facilitate the venting to atmosphere of hot air exiting from said clothes dryer through said hose, said venting device comprising a body having a cylindrical portion bounding an inlet opening at said attachment of said venting device to said hose for allowing the entry thereinto of said exiting hot air, said body having a side wall extending rearwardly from said inlet opening a back wall so as to define a chamber for receiving said hot air, said side wall having exit openings therein adjacent the upper end of said chamber which are oriented substantially in the flow direction of said entering hot air, the back wall oriented in facing relation to said inlet opening and said back wall comprising an inwardly projecting conical shape formed by substantially straight walls in cross section located centrally in said back wall and spaced rearwardly from said exit openings, said hot air flow being characterized such that the hot air first exits the hot air-operated clothes dryer, then passes through the hose and into the inlet of the venting device, the hot air then bypasses the exit openings and impinges upon said conical shape at the back wall, whereby the impingement against said conical shape causes angular flow paths in said hot air, the hot air then flows through said angular flow paths wherein the hot air is discharged through said exit openings, the conical shape which causes the angular flow paths contributes to increasing the volume of hot air which is vented through said exit openings of said venting device.

4,498,248

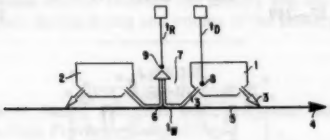
METHOD AND DEVICE FOR CONTROLLING A CONTINUOUS HEAT TREATMENT OF A TEXTILE FABRIC WEB

Manfred Pabst, Cologne, Fed. Rep. of Germany, assignor to A. Monforts GmbH & CO., Monchen- Gladbach, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 416,085
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1981, 3135473; Dec. 8, 1981, 3148576
Int. Cl.³ F26B *21/00*
U.S. Cl. 34—89 **18 Claims**

1. Apparatus for sensing the continuous convective heat treatment of a textile fabric web, comprising a plurality of

nozzles disposed in zones sequentially at a web transport path, said nozzles having nozzle outflow channels adjacent the web for directing heated air toward the web and nozzle return flow channels adjacent the web for removing air, a first measuring sensor disposed directly in each of said nozzle outflow channels for remotely performing measurements for each temperature difference of the web at the transport path, and a second measuring sensor disposed directly in each of said nozzle return flow channels for measuring the amount of heat given off to the web, which is proportional to the temperature of the web, as a function of the difference between the temperature of the air impinging on the web and the temperature of the air reflected by the web.



4,498,249

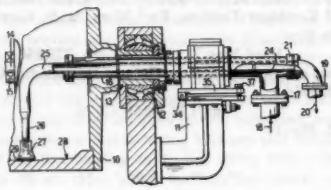
DRYER STATIONARY SYPHON ADJUSTMENT MECHANISM

Ronald D. Cooke, and Neil A. Laage, both of Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Sep. 30, 1982, Ser. No. 430,948

Int. Cl.³ F26B *13/08*

U.S. Cl. 34—125 **6 Claims**



1. A mechanism for drying a traveling web comprising in combination:

a hollow cylindrical dryer drum having an inner surface against which steam condensate collects and being rotatably supported on stationary frame means;

means for introducing steam into the interior of said drum;

a syphon tube extending into an end of the drum with an internal portion having a head adjacent the inner surface of the drum for collecting condensate and having an external portion for receiving the collected condensate;

a rotary steam seal through which the tube extends accommodating rotation of the drum without leakage of steam past the tube; and

a pivotally adjustable mount for the tube on said frame means externally of the drum and an adjustment member for adjusting the angular position of the tube on said mount and thereby adjusting the spacing between the head end and the inner surface of the drum.

4,498,250

APPARATUS FOR TREATING LENGTHS OF MATERIALS WITH A GASEOUS MEDIUM

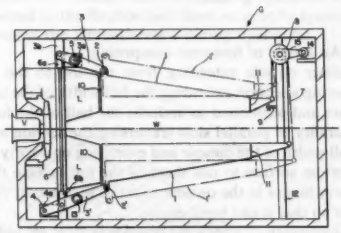
Fritz Gageur, Lindau-Bodolz, Fed. Rep. of Germany, and Horst Wohlgenannt, Bregenz, Austria, assignors to Lindauer Dornier Gesellschaft mbH, Lindau/Bodensee, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,642

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247459

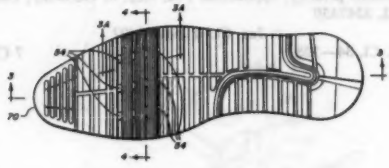
Int. Cl.³ F26B *13/02*

U.S. Cl. 34—155 **7 Claims**



1. In an apparatus for treating a web of material in a treatment chamber by flowing a gaseous treatment medium onto the web through upper and lower nozzle boxes operatively arranged in said treatment chamber to form a gap through which said web may pass, each nozzle box having nozzle openings in a box wall facing said gap and a treatment medium supply inlet arranged for cooperation with a treatment medium supply conduit, the improvement comprising hinging pivot means (2, 2') connected respectively to one end (10) of each upper and lower nozzle box adjacent to said supply inlet, tilting lever means (3, 3') pivotally connected to said hinging pivot means (2, 2') of said nozzle boxes, journal means (4, 5) operatively securing said tilting lever means (3, 3') to said treatment chamber whereby said tilting lever means (3, 3') are tiltable in a plane extending substantially perpendicularly to a plane defined by said web of material, linkage drive means (6) operatively connected to said tilting lever means (3, 3') for interconnecting two nozzle boxes forming a pair for driving said tilting lever means (3, 3') in synchronism and in opposite directions, whereby said upper and lower nozzle boxes forming a pair are moved away from each other and toward each other in synchronism, so that said box walls with the nozzle openings therein extend substantially in parallel to each other in a pair of nozzle boxes, said hinging pivot means (2, 2') defining hinging axes extending in parallel to said web of material, coupling means (7) operatively connected to said upper and lower nozzle boxes forming a pair at an opposite end (11) remote from said hinging pivot means (2, 2'), and direction reversing means (8) arranged in said treatment chamber for cooperation with said coupling means (7) in such a position that said coupling means (7) may move said opposite ends (11) of said pair of nozzle boxes also in synchronism with each other and in opposite directions, whereby said upper and lower nozzle boxes forming a pair are tiltable relative to each other about said hinging axes when said tilting lever means (3, 3') are held in a stationary position, for folding apart said nozzle boxes forming a pair.

4,498,251
SHOE DESIGN
Yoon K. Shin, Pusan, Rep. of Korea, assignor to Mercury International Trading Corp., Mansfield, Mass.
Filed Feb. 7, 1983, Ser. No. 464,204
Int. Cl.³ A43B *13/14, 13/18, 13/00*
U.S. Cl. 36—30 R 19 Claims

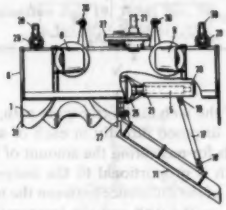


18. An article of footwear comprising:
a rubber outsole extending from the toe to the heel and having a section extending the full width of the sole structure and positioned to underlie the ball of the foot,
a plurality of parallel slots traversing the section across the full width of the outsole and extending upwardly from the bottom surface to just short of the top surface thereof to form hinges in the outsole to make the section very flexible so that it can bend easily,
and a plurality of additional transverse slots provided in the section of the outsole and extending from the upper surface of said section downwardly toward the lower surface, said additional slots lying between the parallel transverse slots that form the hinges.

4,498,252
FOOTWEAR PROTECTOR
Paul E. Connors, 2275 Grand Ave., San Diego, Calif. 92109
Filed Sep. 30, 1982, Ser. No. 431,155
Int. Cl.³ A43B *13/22*
U.S. Cl. 36—72 B 5 Claims

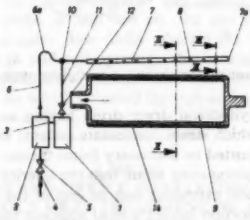
1. A device to protect a heel and a portion of a backside of footwear comprising:
(a) a shield portion which is a wall of generally U-shaped cross-section adapted to envelop the sides and backside of the heel and a suitable portion of the backside of the footwear,
(b) a heel stop portion disposed at a base of the shield adapted to prevent the shield from riding up the heel,
(c) a first heel binding strap portion affixed to the shield at its base and adapted to resiliently embrace a breast of the heel and thereby frictionally hold the device in place, and
(d) a second heel binding strap extending across a saddle of the shield and affixed to the shield at its base and adapted to resiliently embrace a breast of a heel which is too small to be embraced by the first heel binding strap.

4,498,253
SNOW REMOVAL
Alfred Schmidt, Friedrich Strasse 17, D-7822 St. Blasien, Fed. Rep. of Germany
Filed Jul. 8, 1983, Ser. No. 511,959
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1982, 3226273
Int. Cl.³ E01H *5/09*
U.S. Cl. 37—249 11 Claims



1. A snowblower with free support axles for a plurality of removable propeller drums mounted within a housing, said axles being situated horizontally and perpendicular to the driving direction of said drums and including a drive for the propeller drums, means for replacing one of said propeller drums with a snowplow blade including a bushing means mountable on one of said free support axles when said propeller drum has been removed, means mounting the end of said blade nearer to the remaining propeller drum rigidly to said housing, and adjustable means for mounting the end of said blade which is remote from said remaining propeller drum to said bushing means carried by said one of said free support axles from which the propeller drum has been removed, and for adjusting the angle of said blade relative to its support axle by said adjustable means.

4,498,254
SPRAYING APPARATUS FOR LAUNDRY MANGLES
Gotthard Schädlich, Aue, German Democratic Rep., assignor to VEB Kombinat Textima, Karl Marx Stadt, German Democratic Rep.
Filed May 7, 1982, Ser. No. 375,856
Claims priority, application German Democratic Rep., Sep. 1, 1981, 232916
Int. Cl.³ D06F *65/10*
U.S. Cl. 38—14 19 Claims



1. In a steam trough mangle comprising at least one mangle unit including a mangle cylinder having a wrapping and at lease one steam trough partly surrounding said cylinder forming a pressing surface, an apparatus for decreasing the friction between the pressing surface and laundry while being ironed and dried by means of said mangle, said apparatus comprising
(A) an atomizer for atomizing a liquid lubricating agent by means of a gaseous medium under pressure,
(B) at least one conduit connected with said atomizer for

conducting atomized lubricating agent mist away from said atomizer (A), and

(C) at least one pipe connected with said conduit (B), said pipe being provided with openings and extending substantially over the entire width of said at least one mangle unit for spraying said lubricating agent through said openings onto said pressing surface and the wrapping thereby to decrease friction between the laundry and the pressing surface during drying and ironing of the laundry.

4,498,255

PICTURE FRAMES

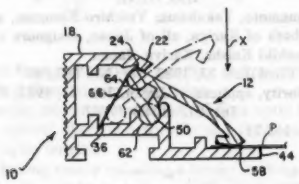
Malcolm G. Heard, P.O. Box 6662, Roggebaai, 8012, Cape Town, Cape Province, South Africa

Filed May 25, 1983, Ser. No. 497,936

Claims priority, application South Africa, May 25, 1982, 82/3629

Int. Cl.³ A47G *1/06*

U.S. Cl. 40—156 **14 Claims**



1. In a picture frame, a structure comprising a base frame member having a wall which forms part of the outer boundary of the frame and first and second spaced flange structures protruding from said wall, said flange structures defining a mouth constituting the entrance to the interior of said frame member, and said first flange structure protruding beyond the second flange structure to provide a flange which forms a backing for an edge zone of a picture, a picture retaining member pivotally mounted on said first flange structure, said retaining member extending through said mouth thereby to provide a first portion which is within the interior of the frame member and a second portion which lies externally of said interior, said second portion including a picture engaging face for gripping a picture between itself and said flange, and said first portion including an end face which swings in an arc when said retaining member is displaced about its pivotal mounting, and a leaf spring in said interior and spanning between said flange structures, said end face bearing on the leaf spring which lies along a chord of the arc along which said end face moves whereby the leaf spring is increasingly deformed and then allowed to relax as said picture retaining member is displaced about its pivotal mounting from either of its end positions.

4,498,256

ITEM INPUT DEVICE FOR A DATA PROCESSING SYSTEM

Toshiaki Tanaka; Masao Fukai; Tatsuro Onuma, and Ryohei Kinoshita, all of Suzaka, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 14, 1981, Ser. No. 292,913

Claims priority, application Japan, Sep. 4, 1980, 55/122789; Sep. 4, 1980, 55/122790

Int. Cl.³ G09F *11/02*

U.S. Cl. 40—475 **16 Claims**

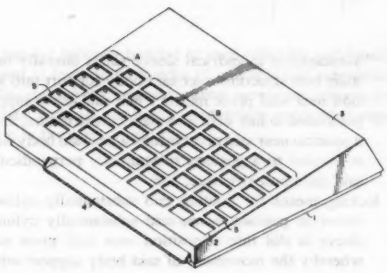
1. An input device for a data processing system, the device being operable in a winding direction and a reverse direction and having a display location for displaying information, comprising:

(a) a rotatable shaft;

(b) a page sheet unit capable of removable attachment with the rotatable shaft, the page sheet unit having

(i) a flexible base sheet with one end having connected thereto a metal linkage pin, the opposite ends of the metal linkage pin projecting from opposite sides of the base sheet, and the rotatable shaft having grooves for receiving in linking arrangement the opposite ends of the metal linkage pin when the page sheet unit is removably attached to the rotatable shaft, and

(ii) a plurality of flexible page sheets, each bearing input information designations, each being bound in the page sheet unit separate from the rotatable shaft and each being wound around the circumference of the rotatable shaft such that the plurality of page sheets overlap one another with their radially outermost ends spaced apart therearound and the ends of the plurality of page sheets which are radially innermost during operation are connected to the flexible base sheet so as to be spaced apart around the circumference during operation;



(c) a page sheet unit exchange mouth opening to the exterior of the device;

(d) a guide path extending from the exchange mouth to the rotatable shaft; and

(e) an endless belt extending around part of the rotatable shaft for maintaining the winding direction of the plurality of page sheets of a page sheet unit removably attached to the rotatable shaft,

wherein the device is operated by inserting a page sheet unit through the exchange mouth and into the guide path so as to link the both ends of the linkage pin and the grooves of the rotatable shaft, by selecting a desired page sheet of the plurality of page sheets by rotation of the rotatable shaft in the winding direction, by deploying a selected page sheet to the display location by rotation of the rotatable shaft in the reverse direction, by releasing the removably attached page sheet unit by rotation of the rotatable shaft in the reverse direction, and by guiding the released page sheet unit out of the device through the exchange mouth via the guide path.

4,498,257

FISHING ROD BUTT

Harold L. Jekel, Rte. 5097, Corning, Calif. 906021

Filed May 23, 1983, Ser. No. 496,909

Int. Cl.³ A01K *87/02*

U.S. Cl. 43—23 **3 Claims**

1. A fishing rod butt, comprising:

a main butt structure constructed of substantially round stock and having a front end and a back end;

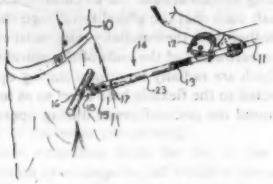
means for attaching a fishing rod to said front end of said main butt structure;

a body support, constructed of substantially round stock of substantially the same diameter as that of which said main butt structure is constructed, having a first end and a second end, said body support being pivotally attached to

said back end of said main butt structure by pivot means positioned midway between said first end and said second end so that said body support pivots to a position in line with said main butt structure and a position substantially perpendicular to said main butt structure;

positioning means for holding said body support in position with respect to said main butt structure, consisting substantially of:

a substantially cylindrical sleeve having an inner diameter substantially equal to the outer diameter of said main butt structure and of said body support such that said



substantially cylindrical sleeve slides laterally on said main butt structure over said body support into a position near said pivot means when said body support is positioned in line with said main butt structure, and into a position near said pivot means when said body support is pivoted to a position substantially perpendicular to said main butt structure, and

locking means for holding said substantially cylindrical sleeve in position when said substantially cylindrical sleeve is slid into a position near said pivot means, whereby the movement of said body support with respect to said main butt structure is limited.

4,498,258

SPINDLE TILTING CONTROL DEVICE FOR A PLANE AND SPHERICAL ROTARY GRINDING MACHINE, FINE GRINDING MACHINE, LAPPING MACHINE AND POLISHING MACHINE

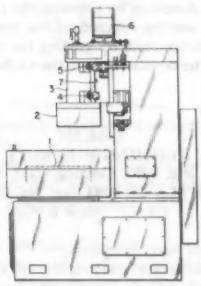
Yoshio Ishimura, 25-5 1-chome Shibayama, Funabashi-shi, Chiba-ken, Japan

PCT No. PCT/JP81/00053, § 371 Date Nov. 10, 1982, § 102(e) Date Nov. 10, 1982, PCT Pub. No. WO82/03039, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 10, 1981, Ser. No. 442,221

Int. Cl.³ B24B *5/00*

U.S. Cl. 51—131.3 **1 Claim**



1. A rotary grinding machine, comprising:

(a) a machine bed with an upper horizontal part, a central vertical part, and a lower horizontal part, said central vertical part having a vertical wall;

(b) a rotary table (1) disposed for rotating in the horizontal plane disposed on said lower horizontal part, including magnetic or vacuum means to retain a workpiece;

(c) a vertical spindle and spindle head (3) alongside the central part of said frame disposed for holding a grindstone (2) so as to contact the workpiece which is to be placed on said rotary table, said spindle head usually rotating said grindstone in the horizontal plane, said spindle including a vertical plane section disposed parallel to said vertical wall;

(d) a joint (7) for holding said spindle plane section to said vertical wall, including a cylindrical shaft section penetrating said vertical wall and a hemispherical head section penetrating said plane section, said head section allowing rotation thereabout by said spindle in universal directions of about sixty degrees; and,

(e) a motor (6) connected to said upper horizontal part, operatively coupled to said spindle to rotate the spindle.

4,498,259

NUMERICAL CONTROLLER FOR A GRINDING MACHINE

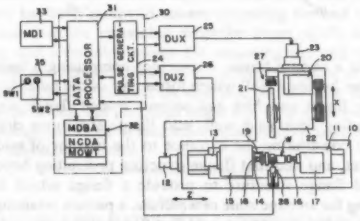
Katsumi Yamamoto, Takahama; Yuichiro Komatsu, and Ikuro Hamada, both of Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 13, 1983, Ser. No. 503,589

Claims priority, application Japan, Jun. 23, 1982, 57-107772

Int. Cl.³ B24B *49/02*

U.S. Cl. 51—165.71 **8 Claims**



1. A numerical controller for a grinding machine having a bed, a workpiece support mounted on said bed for rotatably carrying a workpiece provided with a plurality of portions to be ground respectively at different axial positions thereon, a wheel support mounted on said bed for rotatably carrying a grinding wheel, first feed means for effecting relative movement between said workpiece support and said wheel support so as to present selectively said workpiece portions before said grinding wheel, and second feed means for effecting relative movement between said workpiece support and said wheel support so as to move said grinding wheel toward and away from said workpiece, said numerical controller comprising:

data input means for inputting plural grinding modes in which said workpiece portions are to be ground and plural sets of machining data respectively used for grinding said workpiece portions;

memory means for storing said plural grinding modes and said plural sets of machining data input by said data input means;

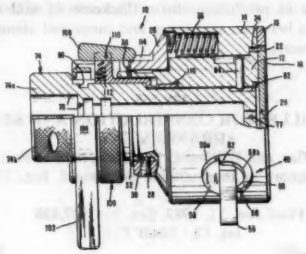
grinding order decision means responsive to said plural grinding modes and said plural sets of machining data stored in said memory means for deciding a grinding order in which said workpiece portions are ground, in accordance with a predetermined rule; and

numerical control means responsive to said grinding order decided by said grinding order decision means and said plural sets of machining data stored in said memory means for controlling said first and second feed means to grind said workpiece portions in said decided grinding order and based upon said plural sets of machining data.

4,498,260
TOOL FOR OPTICALLY FINISHING MULTIPLE MOUNTED OPTICAL FIBERS

John S Doty, Yucaipa, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed May 10, 1982, Ser. No. 376,866
Int. Cl.[3] B24B *41/06*
U.S. Cl. 51—217 R 5 Claims



1. A tool for simultaneously grinding and polishing a plurality of optical fiber termini comprising:

an assembly mounting a plurality of fiber optic ferrules and their optical fibers in a specific and fixed order of their fiber optic termini;

a body having means including a carrier in threaded engagement with said body and supporting and positioning said assembly of ferrules and their fiber termini at a surface on said body, said body means having a first connection with said body for ensuring only linear movement of said assembly towards and away from said body surface and a second connection with said assembly for positioning said ferrules and said fiber termini with respect to said body surface, said assembly supporting means further including a split cradle insertable in said carrier and comprising a pair of halves having a cavity for receiving and holding said ferrules, and said second connection including an annular groove extending about said cradle and retaining means on said carrier engageable with said groove;

a housing surrounding said body and having a surface generally surrounding said body surface; and

means interconnecting said housing and said body for effecting relative movements of retraction and extension therebetween and including a mechanism defining limits to the relative movements, respectively to place said body and housing surfaces in a coplanar position prior to grinding of the ferrules and their fiber termini and to move said body surface into a position forward of said housing surface prior to said polishing of the ferrules and their fiber termini.

4,498,261
LOW PRESSURE VENTING PANEL

Bryce H. Wilson, Kansas City, and Franklin A. Hansen, Raytown, both of Mo., assignors to Continental Disc Corporation, Kansas City, Mo.

Filed Dec. 7, 1981, Ser. No. 328,189
Int. Cl.[3] B65D *25/00;* F16K *17/40*
U.S. Cl. 52—1 15 Claims

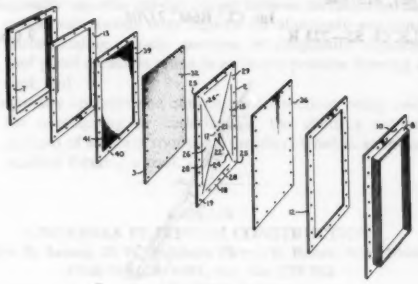
1. A low pressure venting panel comprising:

(a) a rupture body having a central portion and a peripheral margin;

(b) said rupture body having a plurality of slits in said central portion, said slits emanating from an area substantially proximate a center of said rupture body toward said peripheral margin so as to define a plurality of leaves such that said leaves are spreadable outward upon rupture of said rupture body toward said peripheral margin so as to define a plurality of leaves such that said leaves are spreadable outward upon rupture of said rupture body;

(c) a bonding agent on a first side of said rupture body; and

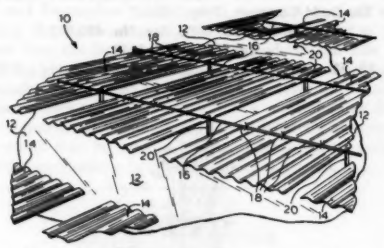
(d) a sealing membrane abutting said first side of said rupture body such that said rupture body and said sealing membrane are securely bonded to each other by said bonding agent at least on both sides of said slits and substantially adjacent thereto; and said sealing membrane being a semi-elastic material and being substantially resistant to expansion in the area of said slits.



4,498,262
SOLAR SHIELD ASSEMBLY

Enrique Garcia, San Juan, P.R., assignor to Enrique Garcia Associates, San Juan, P.R.

Filed Apr. 6, 1981, Ser. No. 223,341
Int. Cl.[3] E04H *14/00, 9/00;* E04D *13/16*
U.S. Cl. 52—173 R 7 Claims



1. An assembly for shielding the concrete surface of a concrete building from solar radiation, which comprises;

a plurality of heat reflective, heat insulative, panels suspended in a position between the source of solar radiation and the surface of the concrete structure, the surface of said panel proximate to the concrete structure being non-planar; and

means attached to said panels for suspending them;

said panels being fixedly spaced from each other and the concrete surface so as to define first open spaces between and second open spaces beneath the panels, said open spaces being in open communication with the atmosphere whereby air may freely circulate in and out of the open spaces which are unchanging in dimension.

4,498,263

TELESCOPIC BEAM

Albert Böcker, Werne, Fed. Rep. of Germany, assignor to Albert Bocker GmbH & Co KG, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,408
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137846
Int. Cl.³ B66C 23/06
U.S. Cl. 52—223 R 9 Claims

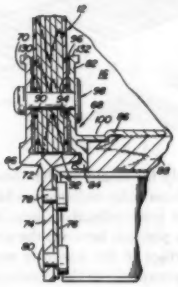
1. In a telescopic beam having a plurality of telescopically-interconnected members and means for locking the members of any adjacent pair together in a pre-determined extended position, the improvement which consists in utilizing elongate tensioning means bridging several of said telescopic members, the elongate tensioning means being guided by means of spacers attached to said telescopic members, the elongate tensioning means comprising at least one cable, wherein one end of said at least one cable is attached to a winding roller around which said at least one cable is windable, the winding roller being attached to a first telescopic member at one end of the beam, the other end of said at least one cable being attached to a stop member fixed to a second telescopic member adjacent to the other end of the beam.

4,498,264

ADHESIVELY BONDED TRAILER INCLUDING FIBER REINFORCED PANELS

Gerald P. McCafferty, Churchville; Stanley J. Navoczynski, Allentown, and Robert W. Kinkle, Wayne, all of Pa., assignors to The Budd Company, Troy, Mich.

Filed Dec. 20, 1982, Ser. No. 450,872
Int. Cl.³ E04B 2/60
U.S. Cl. 52—281 7 Claims



1. In a trailer having a wall panel connected between a roof and floor,

means for supporting said wall panel comprising:

(a) top and bottom horizontal support structures extending along the roof and floor, respectively;

(b) each of said horizontal support structures including inner and outer rail elements disposed to receive said panel therebetween;

(c) means for securing said panel between said inner and outer rail elements;

(d) adhesive means for bonding said inner and outer rail elements to the inner and outer edge surfaces and edges of said panel to provide sealing around the edges of said panel; and

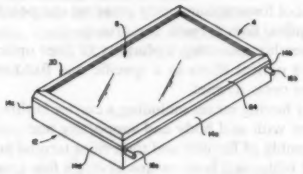
(e) spacer means between said inner and outer rail elements to provide uniform thickness of said adhesive means between said inner and outer rail elements and said panel.

4,498,265

SOLAR COLLECTOR CONSTRUCTION AND SEALING ARRANGEMENT

James A. Leflar, and William C. Wardlow, both of Fort Collins, Colo., assignors to International Solarpanel, Inc., Fort Collins, Colo.

Filed Jun. 11, 1982, Ser. No. 387,358
Int. Cl.³ E06B 3/26
U.S. Cl. 52—403 7 Claims



1. A sealing arrangement for sealing the edge of a glass panel or the like to the sides of a case where the sides of the case are formed with a generally cylindrical groove which faces upwardly and whose opening is narrower than the widest part of the groove, said sealing arrangement including an elongate resilient body comprising

an anchor section dimensioned to fit snuggly within the groove and having an annular cross-section with a slit at the top thereof and a generally cylindrical central opening which is wider than the slit,

a holding section formed integrally with the anchor section near the top thereof and having a side wall projecting upwardly from the top of the anchor section, and a pair of vertically spaced holding walls integrally formed with and projecting laterally from the side wall for receiving the edge of a glass panel or the like,

an upwardly projecting neck which is formed integrally with the anchor section near the top thereof and is separated from said side wall by said slit, and

wherein said sealing arrangement further includes an elongate lock strip which fits over said resilient body and includes

an elongate cap section which fits over the uppermost holding wall and the neck, and

a downwardly extending projection enlarged at the lower end thereof to fit within the slit and central opening of the anchor section.

4,498,266

CONCRETE BLOCK AND HOLLOW INSULATING INSERT THEREFOR

Arnold Perreton, Pleasant St. Webster, Rte. 5, Concord, N.H. 03301

Filed Jun. 22, 1982, Ser. No. 390,820
Int. Cl.³ E04B 2/00
U.S. Cl. 52—405 19 Claims

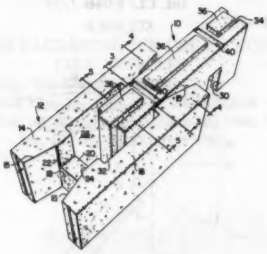
1. A hollow insulating insert adapted to be used with a

building block to form a composite wall structure, said insert comprisng:

(a) top, bottom, side and end walls,

(b) at least two longitudinally spaced notches formed in the bottom wall of the insert extending transversely through the insert and terminating at a point generally intermediate the height of the insert, each of said notches being defined by opposed side walls and a top wall,

(c) a recess formed in each side wall of said notch extending the full height thereof, the portions of the side walls of said



notch on either side of said recesses being adapted to be compressed into said recesses during installation of said insert, and

(d) cavities formed in said insert extending upwardly from and communicating with said notch, said cavities terminating at their upper ends at a point relatively adjacent the top wall of the insert, the side walls of the insert which partially define said cavities being adapted to be compressed into said cavities during installation of said insert, said recesses and cavities being tightly sealed when said insert is located in position so as to form still air chambers.

4,498,267

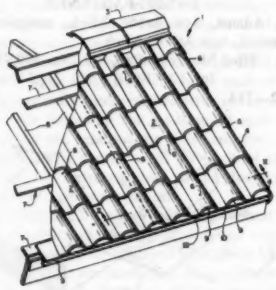
SIMULATED CLAY TILE ROOF CONSTRUCTION AND METHOD OF MAKING SAME

Ermon Beck, 55820 River Shore Estates, Elkhart, Ind. 46516

Filed Nov. 29, 1982, Ser. No. 445,060

Int. Cl.³ E04D *1/00, 1/08*

U.S. Cl. 52—555 **9 Claims**



1. A simulated clay tile roof construction comprising at least one unitary roof panel member formed to simulate a plurality of clay tiles;

said roof panel member being generally rectangular and having a series of raised partial cylindrical portions joined by flat portions;

the longitudinal edges of said roof panel member being located at raised partial cylindrical portions, for overlapping or underlapping raised partial cylindrical portions of longitudinal edges of adjacent roof panel members when in an in-use position forming a roof;

edge regions located at lateral edges of said roof panel member for overlapping or underlapping by engaging corresponding edge regions of adjacent roof panel member when in an in-use position forming a roof;

diagonally opposite cut-out corner sections on raised partial cylindrical portion edge regions for abuttingly engaging corresponding cut-out sections of diagonally adjacent roof panel members when in an in-use position forming a roof; and

diagonally opposite non cut-out corner sections being solid for overlapping or underlapping the abutting cut-out sections of adjacent roof panel members when in an in-use position forming a roof.

4,498,268

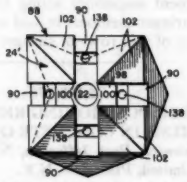
UNDERSEA PLATFORM CONSTRUCTION

Calvin R. Inman, 20 W. Mosholu Pkwy., S. Bronx, N.Y. 10468

Filed Feb. 18, 1981, Ser. No. 235,502

Int. Cl.³ E04C *1/10*

U.S. Cl. 52—593 **1 Claim**



1. A foundation block comprising a rectahedral parallelepiped having quadrangular pyramidal faces, the opposite faces of which are concave and convex, respectively, said opposite faces being cruciform in shape with the legs of the crosses perpendicular to the intermediate sides of the rectahedral parallelepiped, said opposite faces sloping away from the inner vertices of the cross and said opposite faces being sized and shaped to interengage matingly, whereby a plurality of said foundation blocks can be interfitted into a three-dimensional array, said foundation block having a central vertical hole extending from the center of one face to the center of the opposite face, the faces through which said vertical hole extends being provided with notches on each of their four edges, said notches being sized and shaped to receive interlocking keys the exterior surfaces of which lie in a common plane flush with the outermost points of said block, whereby a common plane which may be used as a support for a planar surface facing the interlocking foundation blocks is formed.

4,498,269

KILN FLOOR SYSTEM

Norman H. Andreasen, 1520 W. Norwood Ave., Itasca, Ill. 60143

Division of Ser. No. 235,656, Feb. 18, 1981,. This application Dec. 1, 1982, Ser. No. 446,000

Int. Cl.³ E04C *2/42*

U.S. Cl. 52—669 **3 Claims**

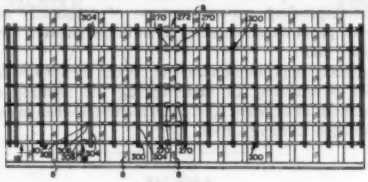
1. A locating brace assembly for use with a plurality of rows of parallel stringer members supporting a kiln floor assembly comprising

a plurality of stringer members lying end to end in an upright configuration in a plurality of rows, each of said rows having a pair of closely spaced upright stringer members being horizontally spaced from each other,

a plurality of elongated locating braces adapted to extend across three or more rows of parallel stringer members at predetermined positions between the end to end extent of

said stringer members for the accurate alignment and installation thereof,

attachment means coupling each of said locating braces to each of the three or more rows of parallel stringer members, said attachment means being spaced along said braces by predetermined distances to establish the spacing of said rows of stringer members,



said attachment means includes a plurality of attachment assemblies for affixing said brace to both stringer members of each of said respective pairs of stringer members in said rows, each of said braces extending perpendicularly across the upper surfaces of said stringer members, and,

said attachment assemblies acting to further support said pairs of stringer members in said upright position during installation of said rows of stringer members.

4,498,270

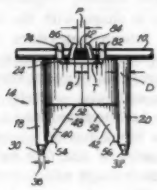
SUPPORT FOR POSITIONING REINFORCING RODS OR MESH IN CONCRETE OR THE LIKE

Robert J. Ilukowicz, Port Jefferson, N.Y., assignor to Preco Industries Limited, Plainview, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,393

Int. Cl.³ F04C 5/16

U.S. Cl. 52—685 **18 Claims**



1. A support for a reinforcing rod, bar or mesh, said support comprising a plate of at least substantially planar construction, a cruciform structure beneath and supporting said plate, a plurality of legs on said cruciform structure and tips depending from and adapted to support said legs and thereby said plate, said tips being adapted to expose a relatively minimal part of said support with said support being embedded in a substance being solidified about and reinforced by said rod, bar or mesh, means on said plate to limit movement of the rod, bar or mesh transversely of said plate, said tips being of inverted truncated conical shape, said means including at least two spaced pairs of pins toed in towards each other and extending upwardly from said plate, said cruciform structure comprising intersecting portions integrated with said plate to extend radially thereof, said intersecting portions having upper surfaces disposed substantially in a common plane with one another and with the upper surface of the plate to form a substantially common upper surface for said support, said intersecting portions intersecting beneath said plate and having outer ends which are integral with said legs to couple said legs with said plate, said intersecting portions including fillet portions, tapered webs depending from said intersection portions and interconnected by said fillet portions, said webs tapering towards said tips, and triangular teeth projecting from said tapered webs at a tapered surface thereof whereby to independently engage and become embedded in said solidified substance to distribute forces thereto.

4,498,271

FIXING ANCHORING BARS OR THE LIKE IN STRUCTURES SUCH AS CONCRETE

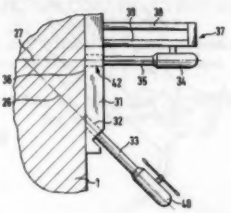
Rudolf Köniğer, and Kai Köniğer, both of Spitalackerstr. 21, D-7808 Waldkirch, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,296

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112421

Int. Cl.³ E04B 1/38

U.S. Cl. 52—707 **23 Claims**



1. Apparatus for use in attaching an anchoring bar to a hardened concrete, cement, stone, or similar structure having an outer face, and anchoring bar and side holes intersecting at a predetermined angle, said apparatus comprising a sprag positioned within said side hole and comprising means for taking up a pulling force acting along an anchoring bar positioned within said anchoring bar hole, said sprag being supported against said outer face and having a generally cylindrical portion with an internally threaded opening extending through it, said opening being angled with respect to the longitudinal axis of said sprag at an angle which is substantially equal to said predetermined angle, said sprag opening being generally aligned with said anchoring bar hole and with said anchoring bar when said anchoring bar is inserted within said anchoring bar hole, said anchoring bar being threaded and being screwed within said threaded opening when inserted within said anchoring bar hole.

4,498,272

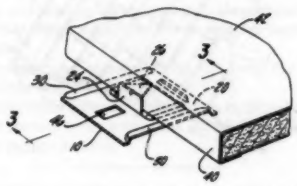
PANEL FASTENER

George C. Adams, Ann Arbor, Mich., assignor to Rollform, Incorporated, Ann Arbor, Mich.

Filed May 20, 1982, Ser. No. 380,211

Int. Cl.³ E04B 1/60, 2/72

U.S. Cl. 52—714 **7 Claims**



1. A wallboard fastener adapted for securing a panel to a framing member comprising:

a substantially planar base having two spaced ends and two spaced longitudinally extending edges,

a single impaling flange secured to a midpoint of said base, said impaling flange comprising a first leg extending perpendicularly outwardly from said base and a second leg

extending from the free end of said leg in a plane parallel to but spaced from said base, said second leg forming at least one point which faces one end of said base and which is adapted for insertion into one edge of said panel,

a ridge formed along each of said longitudinally extending edges of said base, said ridges being formed by bending said edges outwardly from said base in the same direction as said impaling flange, and

said base including a fastener opening positioned between said ridges and between said impaling flange and the other end of said base.

4,498,273

SYSTEM FOR PACKAGING ICE-CREAM CONES AND LIKE ARTICLES

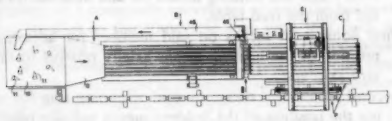
Arturo Colamussi, Via Borso 8, Ferrara, Italy

Filed Dec. 15, 1981, Ser. No. 330,860

Claims priority, application Italy, Dec. 15, 1980, 9012 A/80

Int. Cl.³ B65B *25/00, 57/10*

U.S. Cl. 53—54 **27 Claims**



1. A system for packaging ice-cream cones and similar articles, comprising:

a first processing station which includes a chute having individual races for splitting the main feed stream of the loosely incoming cones into a predetermined number of individual substreams and for previously orienting the cones with their axes parallel to the direction of each individual sub-stream;

a second processing station which includes a pair of conveying belts, the number of which equals the number of individual sub-streams as formed in the first processing station, to originate an orderly temporary cone-storage field having a forward motion, each of said pair of conveying belts having operatively associated therewith devices for marshalling the cones mutually spaced apart between the respective two belts, the cone axes being vertical and the cone tips upside down;

a third processing station which further comprises a plurality of tapes which are parallel and horizontal, corresponding to the number of pairs of conveying belts of the second processing station, each tape having a row of seats adapted to receive individual cones with their axes vertical and their tips pointing downwards, each of said tapes being independently motorized relative to the other tapes, and means for detecting the position of each individual cone in any of the seats of the tapes and for consequentially commanding the forward advance of the relative tape by one step corresponding to the distance between the axes of two consecutive seats;

means for transferring the cones from said second processing station to the third processing station and which further comprises a plurality of members which can be controlled to take either of two positions, one position being for feeding the cones to the seats of the tapes of the third processing station and the other position for rejecting the cones coming from the second processing station, said reject position of said members being operatively associated with a cone-recycling unit to a position upsteam of the first processing station, detection means operatively associated with each of said tapes of the third processing station for detecting the presence of the cones in a determined number of consecutive seats of the respective tape and for controlling the switching of the relative transfer member from said first to said second position if cones are present in said seats and for permitting switch-back of said member to its first position if said seats are empty;

means located in said third processing station for grasping the cones positioned in said determined number of seats of at least one tape, said means for grasping being liftable perpendicularly to the direction of advance of the parallel tapes of the third processing station to selectively grasp the cones from the plurality of tapes to transfer the grasped cones to at least one position adjacent said tapes and to introduce the cones into empty cartons.

4,498,274

DEVICE FOR SUPPLYING AND FOR BRINGING TOGETHER A WEB OF PACKAGING MATERIAL AND A TEAR STRIP WEB

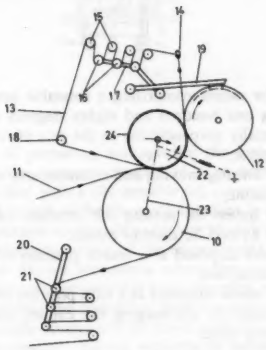
Hans Vorhauer, Schwelm, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,446

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123544

Int. Cl.³ B65B *61/18*

U.S. Cl. 53—412 **10 Claims**



1. A method of mating a moving film of packaging material and a tear strip which is to be applied thereto comprising:

passing the film over a feed roller;

withdrawing the tear strip from a supply reel;

applying a preselected degree of tension to the tear strip;

bringing the tear strip into contact with the surface of the film at the periphery of the feed roller; and

loading a drive wheel against the tear strip supply reel and the feed roller whereby the supply reel will be coupled to the feed roller by the drive wheel and rotate in synchronism with the feed roller.

4,498,275

ROTARY FILLING AND CAPPING APPARATUS

Richard D. Baron, Indian Rocks Beach, Fla., assignor to Lykes Pasco Packing Company, Dade City, Fla.

Continuation-in-part of Ser. No. 30,370, Apr. 16, 1979, Pat. No. 4,276,734. This application Jul. 6, 1981, Ser. No. 280,813

The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.

Int. Cl.³ B65B *3/04, 7/28, 43/50, 57/08*

U.S. Cl. 53—506 **8 Claims**

1. An apparatus for filling and capping a plurality of stackable containers with a fluid from a fluid reservoir, comprising in combination:

a rotary table having a plurality of container receiving means disposed about said rotary table;

a container magazine disposed at a first position relative to said rotary table;

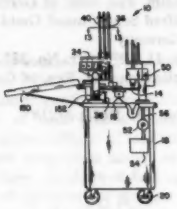
container transfer means for transferring a single one of the plurality of containers from said container magazine to said container receiving means of said rotary table;

a filling head disposed at a second position relative to said rotary table;

pump means connecting the fluid reservoir to said filling head for filling a container disposed on said rotary table with the fluid from the fluid reservoir;

a lid magazine disposed at a third position relative to said rotary table;

lid transfer means for individually transferring lids from said lid magazine to the top of the filled container, said lid magazine being disposed adjacent a container aperture in said rotary table in said third position;



lid transfer means comprising a rotatable arm pivoted for rotating one hundred and eighty degrees about an axis substantially perpendicular to the axis of rotation of said rotary table;

means for linearly moving said rotatable arm relative to said lid magazine;

lid sensor means for sensing the presence of a lid during transfer by said lid transfer means;

a heat sealer disposed at a fourth position relative to said rotary table; and

discharge means disposed at a fifth position relative to said rotary table for discharging the capped container from said rotary table.

4,498,276

HANDLING AND PACKAGING APPARATUS

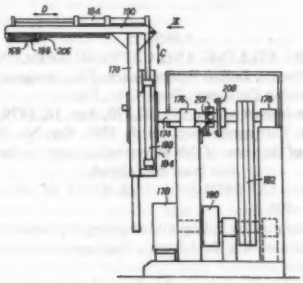
Geoffrey R. Reed, Tadworth, England, assignor to Encomech Product Development Limited, Surrey and Head Wrightson Machine Company Limited, Cleveland, both of, England

Filed Jun. 25, 1981, Ser. No. 277,110

Claims priority, application United Kingdom, Jun. 25, 1980, 8020824

Int. Cl.³ B65B *13/12*

U.S. Cl. 53—588 **14 Claims**



1. Apparatus for wrapping a sheet metal wrapping around a cylindrical coil of material having a hollow core, for covering essentially the entire outer peripheral surface of the coil, comprising:

a mounting extending through the hollow core of the coil for supporting it with its axis horizontal,

a wrapping arm for holding the sheet metal wrapping to be applied to said outer peripheral surface of the coil,

support means for said arm for supporting the arm rotatably about a horizontal axis substantially coincident with the coil axis,

drive means for rotating the arm about said axis,

a feed table for feeding sheets of the sheet metal wrapping in a direction essentially perpendicular to the axis of the coil,

drive means on said table for advancing the metal wrapping sheets towards the wrapping arm and the suspended coil,

a lateral edge guide on said table for wrapping sheets, said guide edge extending in the direction of feed of the feed table, and means for adjusting said guide axially of the coil and mounting for aligning the sheet axially with the coil,

the wrapping arm comprising a member projecting from radially outer end of said wrapping arm parallel to the rotary axis and holding means on said member for sheets fed from the feed table,

first adjustment means on said member for adjusting the position of the holding means axially relative to said rotary axis, and

second adjustment means on said wrapping arm for adjusting the position of the holding means radially relative to said rotary axis.

4,498,277

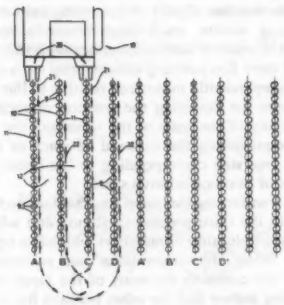
METHOD FOR HARVESTING NARROWLY SPACED ROWS OF PLANTS, METHOD FOR CONVERTING CONVENTIONAL APPARATUS FOR SUCH HARVESTING AND APPARATUS FOR SUCH HARVESTING

Rodney W. Bennett, Tranquillity; Jerry C. Bennett, Fresno; William C. Bennett, Tranquillity, and Charlie Bennett, Avenal, all of Calif., assignors to Bennett and Bennett, Tranquillity, Calif.

Filed Sep. 20, 1983, Ser. No. 533,921

Int. Cl.³ A01D *46/08*

U.S. Cl. 56—1 **9 Claims**



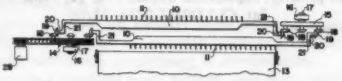
1. A method for harvesting cotton from plants aligned in a plurality of substantially parallel rows, the method comprising traversing at least three of said rows in substantially continuous movement along a course substantially parallel to said rows; and substantially simultaneously harvesting the cotton from the plants of at least two of said rows traversed which are spaced from each other by at least one of said rows traversed from which cotton is not harvested.

4,498,278

HARVESTER SWATH PICK-UP DRIVE

David Friesen, Box 6, R.R. #3, Winkler, Manitoba, Canada R0G 2X0

Filed Apr. 19, 1983, Ser. No. 486,500
Claims priority, application Australia, Apr. 21, 1982, 3685/82
Int. Cl.³ A01D *89/00*
U.S. Cl. 56—364 14 Claims



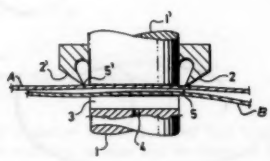
1. A pick-up attachment for a harvester comprising a plurality of members extending transversely across the pick-up arranged generally around and parallel to an axis transverse to a direction of movement of the pick-up, each member supporting a plurality of tines extending therefrom generally outwardly relative to the transverse axis and means for moving the members in a composite movement around the transverse axis and parallel to the transverse axis such that each tine describes a closed path around the transverse axis and inclined thereto, said moving means comprising a pair of parallel planar support members arranged at respective ends of the transverse members, means mounting the support members for rotation about parallel axes generally transverse thereto and lying in a substantially vertical plane, each support member having mounted thereon a plurality of pairs of meshing gears at angularly spaced positions around the support member axis for rotation therewith, offset crank means connecting one of each pair of gears to a respective end of a respective one of the transvers members and means mounting the other of each pair of gears such that rotation of the support member about the axis of the support member causes rotation of said offset crank means about an axis substantially at right angles to said support member axis, said offset crank means of each transverse member being arranged to offset the transverse member outwardly relative to the other transverse members, whereby said rotation of said support members moves the transverse members substantially in a planar movement parallel to the support member plane and not parallel to said composite movement and the rotation of said crank means adds to said planar movement to form said composite movements.

4,498,279

METHOD OF AND APPARATUS FOR SPLICING FIBER FORMATIONS

Miloslav Pavék, Liberec, Czechoslovakia, assignor to Elitex, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Filed Jan. 9, 1984, Ser. No. 569,391
Claims priority, application Czechoslovakia, Jan. 7, 1983, 126-83
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 10 Claims



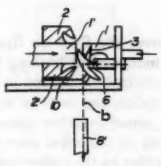
1. Method of splicing fibrous formations, such as yarns in the pressure channel of a splicing chamber, comprising arranging the ends of the fibrous formations to be spliced in side-by-side overlapping relationship in the pressure channel, introducing pressure air into the splicing channel so that it blows outwardly therethrough so as to subject the portions of the fibrous formations disposed within the pressure channel to the action of the air as it flows outwardly from the pressure channel, and vibrating the column of air passing through the pressure channel at a high frequency lying within the frequency range from the high frequency end of the audible to a supersonic frequency within the sonic wave spectrum.

4,498,280

METHOD OF AND APPARATUS FOR PREPARING AND SPLICING THE ENDS OF FIBROUS FORMATIONS

Miloslav Pavek, and Ladislav Hlubucek, both of Liberec, Czechoslovakia, assignors to ELITEX, koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Filed Jan. 9, 1984, Ser. No. 569,392
Claims priority, application Czechoslovakia, Jan. 7, 1983, 127-83
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 6 Claims



1. Method of preparing and splicing the ends of fibrous formations in the pressure channel of a pneumatic splicing chamber provided with a displaceable lid, comprising placing ends of excess length of the fibrous formations in overlapping substantially parallel relationship adjacent to each other within the pressure channel, cutting off the excess length at each end of each of the fibrous formations when they are positioned within the pressure channel, after such trimming of the fibrous formations bending the remaining ends thereof without gripping by adjustable obstacles with blades over the edges of the mouth of the pressure channel, whereby to retain the fibrous formations in generally parallel relationship in the pressure channel of the splicing chamber, and subjecting the thus positioned fibrous formations to the whirling effect of a pressure air flow which is introduced centrally into the pressure channel and flows outwardly therefrom in opposite directions through the mouths of the channel, upon leaving the mouth of the pressure channel the pressure flow impinging upon adjustable obstacles provided with blades.

4,498,281

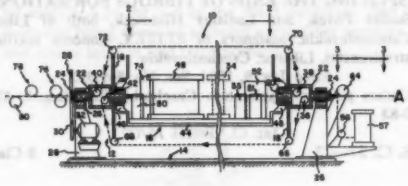
APPARATUS AND METHOD OF MAKING METALLIC CORD

Frederick G. Wraight, Strassen, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 25, 1983, Ser. No. 488,560
Claims priority, application Luxembourg, May 7, 1982, 84134
Int. Cl.³ D07B *3/12, 3/02*
U.S. Cl. 57—58.34 13 Claims

1. Apparatus for producing metallic cords adapted to be used as reinforcing members in elastomeric structures in a machine having a rotating flyer with flyer pulleys to guide wire over the flyer and sunken pulleys to guide wire to and from the flyer axis of rotation (A) all of which rotates with the flyer, a shuttle mounted within the flyer freely rotatable relative thereto about the flyer axis (A) for supporting internal spools of wire from which wire or wires may pass from the interior of the shuttle passing over sunken pulleys to the exterior of the flyer on the flyer pulleys, means for guiding and drawing wires from external spools of wire through the machine and over the flyer on flyer pulleys together with the

wires from the internal spools comprising: idler rollers on the shuttle for guiding wires from the internal and external spools around the internal spools including idler rollers tangent to the axis of the flyer (A) for guiding wires into and out of the shuttle, a brake-capstan on said shuttle in the path of the wire between the internal spools and the sunken pulley directing wires from the shuttle over the flyer on flyer pulleys, another brake-capstan on said shuttle in the path of the wire between the external spools and the sunken pulley directing the wires



from the shuttle over the flyer on flyer pulleys, each brake capstan applying independent braking force to the wires received thereon to control the tension in both the wire or wires from the internal spools and wire or wires from the external spools which are joined together upon reaching the sunken pulley which directs all the wires over the flyer on flyer pulleys to exit the machine by the redirecting of the sunken pulley directing the now formed cord from the machine on the flyer axis A.

4,498,282

WIRE ROPE HAVING A DURABLE MARKER

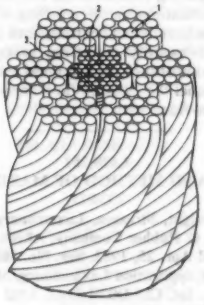
Reinhard Graetz, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,298

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 8136921[U]

Int. Cl.³ B32B *1/00, 15/00;* **D07B** *1/06;* **D02G** *3/00*

U.S. Cl. 57—218 **8 Claims**



1. A wire rope having a durable marker, comprising:

a rope core comprised of a first plurality of strands;

a second plurality of strands twisted together around said rope core; and

a durable marker comprising a synthetic resin tape which carries marking information and which has a width of from about 2 to 6 mm and a thickness of from about 10 to 100 μm, said tape being wound in a spirally overlapping manner around a support element and being worked into the strands of the wire rope in the direction of the longitudinal axis of said wire rope.

4,498,283

APPARATUS FOR LOCATING A TRAVELING-TYPE SERVICING DEVICE IN A MULTISTATION TEXTILE MACHINE

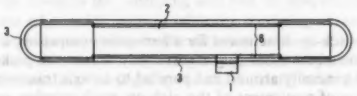
Ikuo Kodama, Toyoda; Shigeru Muramatsu, Okazaki; Kazunori Terasaki, and Takayuki Morita, both of Kariya, all of Japan, assignors to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki, Kariya, Japan

Filed Feb. 10, 1983, Ser. No. 465,538

Claims priority, application Japan, Feb. 12, 1982, 57-021857

Int. Cl.³ D01H *9/14, 15/00*

U.S. Cl. 57—261 **11 Claims**



1. An apparatus for locating a servicing device which is supported movably along a parent textile machine, such as a spinning frame, including a plurality of stations and may stop at any designated station of said parent machine to perform a servicing operation, such as yarn piecing, package doffing or cleaning, at said designated station by use of a fluid medium, such as compressed air or vacuum, which may be supplied from any source of such fluid disposed along said plurality of stations separately from said servicing device, said apparatus comprising, on one hand, on said parent textile machine:

a stationary connector means arranged for each of said stations of said parent machine at intervals corresponding to the station-to-station distance and each communicating with said source of fluid;

a locator guide member disposed adjacently of each of said stationary connector means, and said apparatus comprising, on the other hand, on said servicing device;

an actuator means;

a locator member movable by said actuator means toward and away from the respective of said locator guide members and having an end portion engageable therewith;

a communicator member having a conduit formed therethrough and movable together with said locator member by said actuator means; and

a movable connector means fixed to said communicator member in communication with said conduit thereof and engageable with each of said stationary connector means.

4,498,284

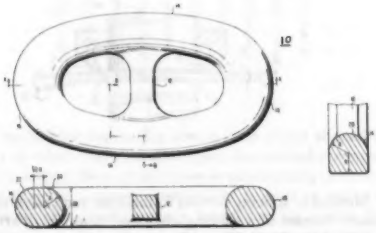
CHAIN LINK

Gordon E. Gearhart, Atlanta, Ga., assignor to E.V. Camp Steel Works, Inc., Atlanta, Ga.

Filed May 25, 1982, Ser. No. 381,892

Int. Cl.³ F16G *13/06*

U.S. Cl. 59—84 **14 Claims**



1. A chain link having variable cross sectional areas which

are configured in order to provide improved functional and weight characteristics, comprising in combination:

an elongated elliptical body section, said body section having longitudinal side portions and end portions; wherein said end portions have an ovular shaped cross sectional configuration and said longitudinal side portions have a "D" shaped cross sectional configuration; and

the "D" shaped cross sectional portion is formed by a semicircle having a radius R and the straight portion is formed by a rectangle portion having sides whose length is 2R and whose width is R.

8. A chain link having variable cross sectional areas which are configured in order to provide improved functional and weight characteristics, comprising in combination:

an elongated elliptical body section, said body section having longitudinal side portions and end portions; wherein

said end portions have an ovular shaped cross sectional configuration and said longitudinal side portions have a "D" shaped cross sectional configuration; and

said ovular end portion has two end sections which are semicircular each having a radius R and a rectangular central portion having a length 2R and a width of $\frac{1}{2}$R.

4,498,285

GAS TURBINE PLANT WITH A FLUIDIZED BED COMBUSTION CHAMBER

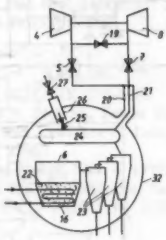
Sven-Erik Kreij, Linköping, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden

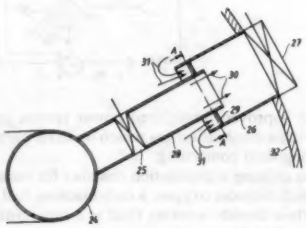
Filed Jun. 9, 1983, Ser. No. 502,837

Claims priority, application Sweden, Jun. 14, 1982, 8203664

Int. Cl.³ F02G *3/00*; F02C *3/20*

U.S. Cl. 60—39.1 **6 Claims**





1. A gas turbine plant comprising

a compressor,

a turbine,

a combustion chamber for a fluidized bed between said compressor and said turbine and enclosed in a pressure container,

means for providing pressurized combustion air from said compressor to said pressure container,

inlet means for providing pressurized combustion air from said pressure container to said combustion chamber,

first and second shut-off valve means for shutting off, respectively, the compressor and the turbine from the combustion chamber, and a by-pass duct including a third valve means for direct connection of the compressor and the turbine upon a drop out of the turbine load,

a valve system for blow off of combustion gas from the combustion chamber upon a drop out of the turbine load, said valve system including means for mixing together hot combustion gas and colder compressed air from said pressure container during the blow off.

4,498,286

GAS TURBINE PLANT WITH A FLUIDIZED BED COMBUSTION CHAMBER

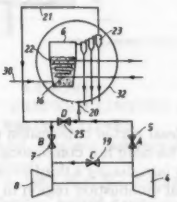
Roine Brännström, Finspong, and Sven-Erik Kreij, Linköping, both of Sweden, assignors to Stal-Laval Turbin AB, Finspong, Sweden

Filed Jun. 9, 1983, Ser. No. 502,838

Claims priority, application Sweden, Jun. 14, 1982, 8203665

Int. Cl.³ F02G *3/00*; F02C *9/00*

U.S. Cl. 60—39.1 **8 Claims**



1. A gas turbine plant comprising:

a compressor;

a turbine;

a pressure container for containing combustion air compressed by said compressor;

a combustion chamber enclosed in said container and surrounded by said compressed air;

a fluidizable bed within said combustion chamber;

inlet means for supplying pressurized combustion air from said container to said combustion chamber so as to fluidize said fluidizable bed;

means for supplying fuel to the fluidized bed;

conduit means for combustion gas connecting said combustion chamber with said gas turbine;

a first valve means for shutting off said compressor from said container;

a second valve means for shutting off said turbine from said combustion chamber;

a third valve means for direct connection of said compressor and said turbine when cutting out a turbine load; and

a fourth valve means for short-circuiting the fluidized bed by connecting the outlet side of said combustion chamber with said compressed air contained in said container and surrounding said combustion chamber.

4,498,287

COMBUSTORS AND METHODS OF OPERATING SAME

Robert M. Schirmer, and Ellsworth H. Fromm, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 220,210, Dec. 23, 1980, Pat. No. 4,385,490, which is a continuation-in-part of Ser. No. 933,344, Aug. 14, 1978, abandoned. This application Sep. 29, 1982, Ser. No. 427,250

Int. Cl.³ F02C *3/14*

U.S. Cl. 60—39.02 **13 Claims**

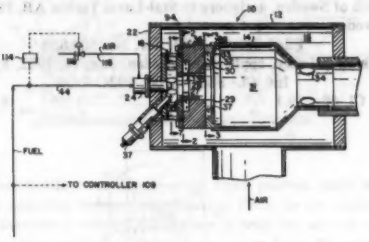
1. A method for the combustion of a fuel in a combustion zone having a first cylindrical upstream combustion region, and a second cylindrical combustion region located adjacent,

downstream from, concentric with, and in communication with said first combustion region; which method comprises, in combination:

introducing a stream of fuel together with a stream of assist air into the upstream end portion of said cylindrical, upstream combustion region,

introducing a first stream of air at a controlled but variable rate into said upstream end portion of said first combustion region,

tangentially introducing a second stream of air into said first combustion region in a circumferential direction and forming a combustible mixture of said fuel and said streams of air,



causing at least partial combustion of said combustible mixture and forming hot combustion products;

tangentially introducing a third stream of air into said second cylindrical combustion region in a circumferential direction, said second region having an abrupt enlargement of diameter so that the volume capacities of the first combustion region as compared to the second combustion region is in a ratio of the range of about 1:35 to about 1:45;

controlling said variable rate of introduction of said first stream of air in accordance with the rate of introduction of said fuel, and

controlling the pressure, or the volume, of said stream of assist air in accordance with the rate of introduction of said fuel.

4,498,288

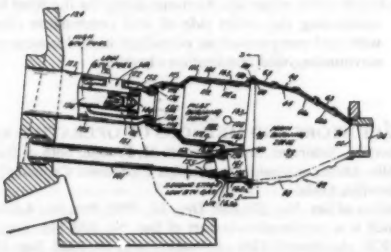
FUEL INJECTION STAGED SECTORAL COMBUSTOR FOR BURNING LOW-BTU FUEL GAS

Robert L. Vogt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 166,726, Jul. 7, 1980, abandoned, which is a division of Ser. No. 951,181, Oct. 13, 1978, Pat. No. 4,253,301. This application Feb. 9, 1983, Ser. No. 465,295

Int. Cl.³ F02C *3/14*

U.S. Cl. 60—39.06 **5 Claims**



1. A method of operating a fuel injection staged high temperature combustor, said combustor including a pilot burning zone and a main burning zone communicating therewith, said method comprising:

introducing at least one of a first low-BTU fuel and a high-BTU fuel and a first flow of swirling air into an upstream end of said pilot burning zone and mixing therein to form a first fuel-air mixture;

introducing during at least a portion of the combustor's operation, the other of said first low-BTU fuel and said high-BTU fuel into said upstream end of said pilot burning zone to form a part of said first fuel-air mixture;

igniting and burning said first fuel-air mixture in said pilot burning zone;

flowing the combustion products from said pilot burning zone into an upstream end of said main burning zone;

introducing at least a second low-BTU fuel and a second flow of swirling air into said main burning zone for mixing with said combustion products; and

adjusting a relationship between said first and second low-BTU fuel, said high-BTU fuel and said first and second flow of swirling air to increase a temperature in said main burning zone an increment above a temperature in said pilot zone effective to maintain a local equivalence ratio in said combustor within a preselected range.

4,498,289

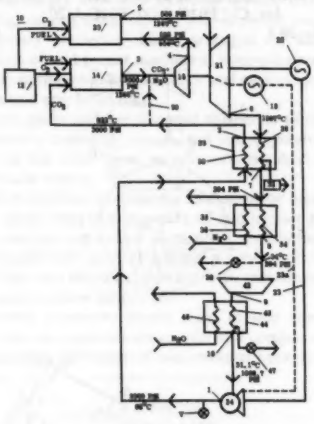
CARBON DIOXIDE POWER CYCLE

Ian Osgerby, c/o Dennis R. Lowe, Esq., 1842 Massachusetts Ave., Lexington, Mass. 02173

Filed Dec. 27, 1982, Ser. No. 453,724

Int. Cl.³ F02N *25/06*

U.S. Cl. 60—39.52 **19 Claims**



1. An improved direct fired power system generating and employing a combustion gas which includes carbon dioxide as a working fluid comprising:

means defining a combustion chamber for burning a mixture which includes oxygen, a carbonaceous fuel and recycled carbon dioxide working fluid at a supercritical first pressure, thereby providing a combustion gas which includes carbon dioxide and water at substantially said first pressure, and a supercritical temperature,

means defining a first turbine for receiving combustion gas from said combustion chamber and allowing said gas to expand therethrough to generate power and reduce the pressure of said combustion gas to a second pressure while maintaining a supercritical state,

means for receiving said combustion gas from said first turbine and heating said gas at said second pressure to a higher temperature

means defining a second turbine for receiving combustion gas from said means for heating and allowing said gas to expand therethrough to generate power and further re-

duce the pressure on said combustion gas to a third pressure while maintaining a supercritical state,

means defining a heat exchanger having first and second ducts in heat exchange relationship, said first duct receiving combustion gas from said second turbine and conducting said gas therethrough, said second duct conducting recycled carbon dioxide working fluid at substantilly said first pressure and a temperature below that of said combustion gas in said first duct therethrough and having an output connected to said combustion chamber for providing at least a portion of said recycled carbon dioxide thereto, for enabling said combustion gas to transfer heat to said recycled carbon dioxide to condense at least a portion of the water in said combustion gas, but maintain the carbon dioxide thereof in a supercritical state,

means for separating the condensed water from the remainder of said combustion gas

first cooling means connected to the output of said first duct of said heat exchanger for receiving combustion gas therefrom and cooling said combustion gas to a supercritical first temperature,

first compression means for receiving said combustion gas from said first cooling means and compressing said combustion gas to a fourth pressure below said first pressure,

second cooling means for receiving said combustion gas from said first compression means and cooling said combustion gas to a second temperature at essentially the liquid/gas interface of said combuston gas and,

second compression means for receiving said combustion gas from said second cooling means and compressing said gas to substantially said first pressure to thereby provide said recycled carbon dioxide working fluid, said second compression means being connected to the input of said second duct of said heat exchanger for providing said recycled carbon dioxide thereto.

4,498,290

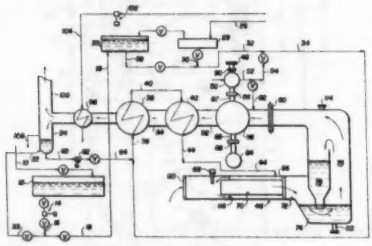
ROTARY ENGINE

Arnold M. Leas, 122 N. 34th St., Towne House Village, Richmond, Ind. 47374, and Lawrence E. Leas, 1482 Sinaloa Rd., Simi Valley, Calif. 93065

Division of Ser. No. 91,919, Nov. 6, 1979, abandoned. This application Jun. 30, 1981, Ser. No. 279,120

Int. Cl.³ F02C *3/14, 3/20*

U.S. Cl. 60—39.55 **5 Claims**



1. An apparatus for burning a mixture of methyl alcohol vapor and steam with near stoichiometric quantities of air, said apparatus comprising:

a primary combustion chamber wherein said methyl alcohol vapor is partially oxidized;

steam introduction means operably connected to said primary combustion chamber for supplying sufficient steam to said combustion chamber to maintain said combustion chamber at a temperature of between 1500° F. and 2000° F.;

a secondary combustion chamber into which the residual fuel not burned in the primary combustion chamber is passed and which contains a fluidized bed of an oxidized stainless steel powder which effects a further oxidation of the fuel;

a gas expander positioned relative to said secondary combustion chamber such that exhaust gases from said secondary combustion chamber may be pressured into said expander;

power take-off shafts operably connected to said gas expander and driven by said gas expander;

cooling means extending from said gas expander into which exhaust gases from said gas expander are passed and cooled sufficiently to condensate a portion of said steam;

condensate recovery means positioned relative to said cooling means to collect said condensed steam;

heating means connected to said condensate recovery means and into which a portion of said condensed steam is passed and converted to steam; and

recycle means connected to said heating means and to said primary combustion chamber for directing a portion of said steam recovered from said heating means into said primary combustion chamber.

4,498,291

TURBINE OVERSPEED LIMITER FOR TURBOMACHINES

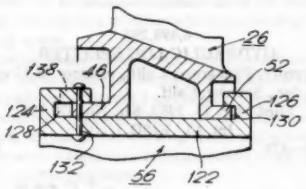
Graham J. Jeffery, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 6, 1983, Ser. No. 539,381

Claims priority, application United Kingdom, Oct. 6, 1982, 8228584

Int. Cl.³ F02G *3/00;* **F01B** *25/16;* **F01D** *21/00*

U.S. Cl. 60—39.091 **9 Claims**



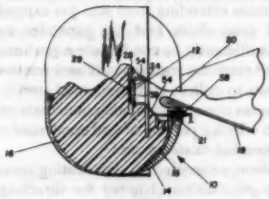
1. A mechanism for preventing a turbine rotor from exceeding a predetermined speed if a shaft, connecting the turbine rotor to a compressor rotor of the engine, breaks and releases its axial and torsional constraint on the turbine rotor, the mechanism comprising a segmented stator vane assembly downstream of a stage of the turbine rotor, each segment having first and second members projecting radially inwards, the first and second members being provided respectively at an upstream and downstream region of the inner end of each segment, a constraining means located adjacent the radially outer ends of the segments and operable to constrain the segments against displacement bodily on an axial direction, and static structure of the engine constructed and arranged relative to the turbine rotor so that it engages the first and second members and provides radially outwards and axially rearwards constraint on the first members and radially inwards and axially forwards constraint on the second member, and when the shaft breaks and the turbine rotor strikes the structure in an axial direction, the structure retains the first members of each segment and provides a means about which the segments rotate and simultaneously releases its axial and radial constraint on the second member of each segment thereby, in use, causing the gas loads on the segment to tilt an upstream outer region of the segments about the fulcrum into the path of the turbine rotor blades.

4,498,292

IGNITER FOR ROCKET MOTORS

C. Max White, Brigham City, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Filed Feb. 2, 1983, Ser. No. 463,102
Int. Cl.³ F02K *9/08*
U.S. Cl. 60—256 **10 Claims**



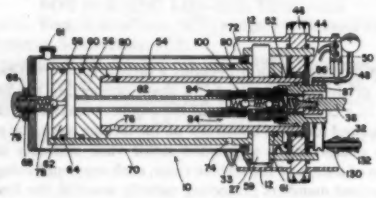
1. An igniter for a rocket motor comprising,
a hat-shaped housing having a disk attached to one end of a hollow cylinder having a flange at its other end for attachment of the igniter to the propellant of the rocket motor, said cylinder having a plurality of peripherally spaced holes therein, the inner surface of said cylinder being lined with an elastomer liner having holes therein in alignment with the holes in said cylinder,
a circular piece of fiber glass cloth bonded to the inside of said disk of said housing,
a flat, circular propellant disk partially bonded to said fiber glass cloth, said propellant disk having a plurality of holes therein to adjust mass flow rate of gases thereof, and having a plurality of radial grooves on a surface thereof to direct the burning propellant gases through the aligned peripheral holes in said cylinder and liner, and
means to ignite said propellant disk.

4,498,293

HYDRAULIC LOG SPLITTER

Jack T. Gregory, Penngrove, Calif., assignor to Gregory Tool Systems, Inc., Sonoma, Calif.

Filed Mar. 28, 1983, Ser. No. 479,795
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—478 **12 Claims**



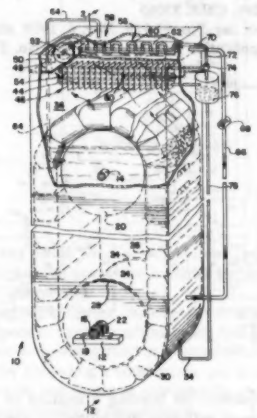
1. A hydraulic force-delivering tool comprising:
a hydraulic cylinder having a cylinder head at one end thereof;
a piston slidably received in said cylinder;
an inlet opening into said cylinder between said piston and said cylinder head; and
a hydraulic actuator pump;
said hydraulic actuator pump comprising:
a valve body having a cylindrical bore therein;
a forward end of said valve body connected to said inlet to seal therearound;
means forming a flow passageway through said forward end of said valve body;
a main power check valve in said flow passageway forming means enabling flow only outward of said valve body;
a hollow plunger movable axially in said bore;
drive means operative when actuated to reciprocate said plunger;
a cylindrical cup carried on the forward end of said plunger and slidable in said cylindrical bore;
a cylindrical tubular guide in said valve body extending rearward from said flow passageway forming means and slidably receiving said cup;
said bore being larger than said tubular guide to form an annular space around said tubular guide ahead of said cup;
a hydraulic reservoir around said valve body;
a first lateral inlet port in said valve body opening into said bore;
a second lateral inlet port in said hollow plunger;
first-stage load port means opening through the bottom of said cylindrical cup;
a first-stage one-way check valve engageable with said first stage port means and enabling inward flow only therethrough;
load duct means from within said hollow plunger to said first-stage load port means;
a valve seat in said load duct means;
a high volume check valve engageable with said valve seat to enable inward flow only;
second stage duct means from said load duct means to said annular spaces, and
pressure responsive means inactivating said high volume check valve to bypass same in response to an increase in pressure in said load duct means above a predetermined level.

4,498,294

BUOYANCY PRIME MOVER WITH PRESSURE CONTROL MEANS

Thomas D. Everett, 1144 E. Washington Blvd., Lombard, Ill. 60148

Continuation-in-part of Ser. No. 260,390, May 4, 1981, Pat. No. 4,363,212. This application Aug. 17, 1982, Ser. No. 408,767
Int. Cl.³ F03G *7/00*
U.S. Cl. 60—496 **9 Claims**



1. An apparatus for converting the potential energy of a gas buoyant within a liquid into rotating mechanical energy comprising:
(a) rotating means supported by an enclosed frame including at least two upper and lower sprockets freely rotatable about shafts mounted within said frame and being at least partially immersed within the liquid, each of said upper and lower sprockets supporting a continuous chain for movement about a horizontal axis of rotation;
(b) a plurality of adjacent buckets immersed in the liquid and

coupled to said continuous chains such that the buckets are equidistant and each bucket is in close proximity with an adjacent bucket to nest within said adjacent bucket for streamlined vertical movement about the horizontal axis of rotation;

(c) means for compressing the gas that flows from the buckets upon rotation about the upper sprockets to produce a heated, pressurized gas;

(d) means in operative communication with said compressing means for condensing the heated, pressurized gas to produce a cooled, liquified gas; and

(e) means in communication with said condensing means for circulating the cooled, liquified gas to generate said gas within said enclosed frame

whereby upon filling each bucket with a volume of said gas to displace the liquid from each bucket, the buckets move through the liquid with minimal turbulence and revolve the rotating means about the horizontal axis of rotation to generate power and the gas can be pressurized, condensed and vaporized for recirculation through the apparatus.

4,498,295

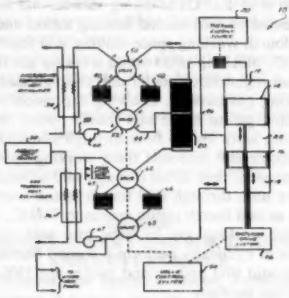
THERMAL ENERGY TRANSFER SYSTEM AND METHOD

Stellan Knoos, 5933 Avenida Chamnez, La Jolla, Calif. 92037

Filed Aug. 9, 1982, Ser. No. 406,342

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—517 **34 Claims**



1. A thermodynamic system for interchanging thermal energy with external sources or sinks, comprising:

a thermodynamic machine including regenerator means, a working fluid, and means for cycling the working fluid bidirectionally through the regenerator means;

at least one heat exchanger for interchanging thermal energy with a heat source or sink, the heat exchanger including means for receiving working fluid therein; and

switchable thermal energy storage means coupling working fluid between the regenerator means of the thermodynamic machine and the heat exchanger, the switchable thermal energy storage means isolating the thermodynamic machine from the heat exchanger for at least predetermined intervals during operation of the thermodynamic machine.

4,498,296

THERMODYNAMIC OSCILLATOR WITH AVERAGE PRESSURE CONTROL

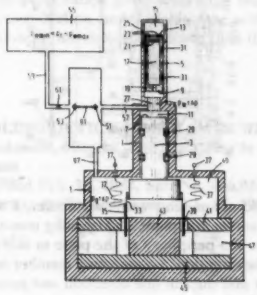
Kees Dijkstra, and Andreas J. Garenfeld, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 24, 1983, Ser. No. 525,907

Claims priority, application Netherlands, Jul. 1, 1983, 8302337

Int. Cl.³ F02G *1/06*

U.S. Cl. 60—521 **10 Claims**



1. A thermodynamic oscillator having at least one displacer which is displaceable in a working space filled with the working medium at the resonant frequency of the oscillator and which divides the working space into an expansion space and a compression space of different substantially constant temperatures, which expansion and compression spaces communicate with the each other through a regenerator, the movement of the displacer due to pressure fluctuations in the working medium being coupled to a member which is also displaceable in the working space,

said working space being connected through at least one release valve having a mechanical pre-stress and at least one supply valve having a mechanical pre-stress to at least one reservoir which is filled with the the same working medium as that of the working space and whose pressure lies between a maximum and a minimum working pressure of the working medium,

characterized in that the release valve and the supply valve are arranged in the connection between one simple reservoir and the working space, and

said oscillator comprises means for varying bothe the opening pressure of the release valve and the opening pressure of the supply valve as a function of the ambient temperature, the opening pressure of the release valve being equal to the sum of the mechanical pre-stress of the release valve and the reservoir pressure, and the opening pressure of the supply valve being equal to the difference between the reservoir pressure and the mechanical pre-stress of the supply valve.

4,498,297

HEAT EXCHANGER MODULE FOR STIRLING ENGINES

Michel J. P. Darche, Ville d'Avray, and Stig Carlqvist, Paris, both of France, assignors to Societe ECA, Asnieres, France

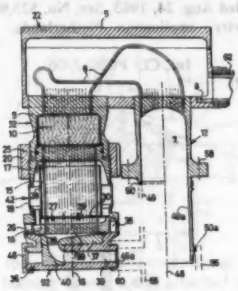
Filed Apr. 20, 1982, Ser. No. 370,132

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—525 **5 Claims**

1. A modular heat exchanger for a Stirling engine having cylinders and cylinder heads, said unit comprising a tubular heater, a regenerator and a tubular cooler, the regenerator and cooler forming an assembly of generally cylindrical shape whose axis is parallel to the axis of the head of a first cylinder,

said tubular heater having a housing rigidly connecting said head of said first cylinder and the regenerator, a wall of said unit being flexible and capable of absorbing the effects of thermal expansion of the heater, said cooler having a plate at its base comprising an opening parallel and eccentric to the axis of



the cooler and connecting with said cooler, a duct extending transversely across said plate, said opening meeting said duct at a point nearer the periphery of the plate in one direction than in the opposite direction, a connecting member connecting said opening with said duct in one direction and means connecting said duct to the base of a second cylinder.

4,498,298

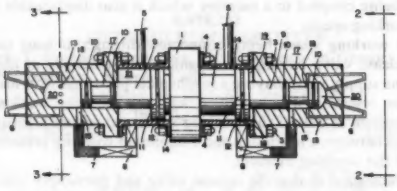
STIRLING CYCLE PISTON ENGINE

George R. Morgan, 1831 S. Berthed Pl., Tucson, Ariz. 85710

Filed Sep. 15, 1983, Ser. No. 532,652

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—525 **1 Claim**



1. A hot gas Stirling cycle engine in which a plurality of gases are alternately expanded and compressed in closed thermodynamic systems comprising:

a first cylinder with a first piston with a working gas passage reciprocating in said cylinder;

a second cylinder located on cylindrical axis mounted to said first cylinder with a second piston reciprocating in said cylinder in a fixed relationship with said first piston;

a transmission of power means coupled to said second cylinder mounted perpendicular to cylinderical axis operatively coupled to said second piston;

a third cylinder located on cylindrical axis mounted to said transmission of power means, with a third piston reciprocating in said cylinder in a fixed phase relationship to said first and second pistons;

a fourth cylinder located on cylinderical axis mounted to said third cylinder with a fourth piston, with a working gas passage reciprocating in said cylinder in a fixed relationship to said third piston;

a first working space defined by said first cylinder and said first piston in which a heated gas expands to perform work in moving said first piston;

a second working space defined by said second cylinder and said second piston in which a cooled gas is compressed;

a third working space defined by said third cylinder and said third piston in which a cooled gas is compressed;

a fourth working space defined by said fourth cylinder and said fourth piston in which a heated gas expands to perform work in moving said fourth piston;

a first heating means external of said first cylinder providing a heat source for gas flowing into said first working space;

a second heating means external of said fourth cylinder providing a heat source for gas flowing into said fourth working space;

a first regenerator-cooler unit located near said cylinderical axis located in a gas passage connecting said first and second working spaces;

a second regenerator-cooler unit located near said cylinderical axis and located in a gas passage connecting said third and fourth said working spaces;

a first working gas inject/reject regulation means external of said second cylinder providing a source of working gas to second working space; a second working gas inject/reject regulation means external of said third cylinder providing a source of working gas to third working space;

whereby a first working gas flows from said first regenerator-cooler unit through said first piston working gas passage into said first heating means as said first piston is at T.D.C., allowing said first working gas to be heated by said first heating means and to flow into said first working space, moving said first piston from T.D.C., blocking said first working gas flow from said first regenerator-cooler unit, through said first piston working gas passage, allowing expansion of said first working gas to move said first piston to B.D.C., performing work and to flow through said first regenerator-cooler unit into said second working space where it is compressed, then flows through said first regenerator-cooler unit, through said first piston working gas passage as said first piston moves to T.D.C., allowing said first working gas to flow into said first heating means to cyclically perform a first Stirling cycle;

wherein a second working gas flows from said second regenerator-cooler unit through said fourth piston working gas passage into said second heating means as said fourth piston is at T.D.C., allowing said second working gas to be heated by said second heating means and to flow into said fourth working space moving said fourth piston from T.D.C., blocking said second working gas flow from said second regenerator-cooler unit through said fourth piston working gas passage, allowing expansion of said second working gas to move said fourth piston to B.D.C., performing work and to flow through said second regenerator-cooler unit into said third working space where it is compressed, then flows through said second regenerator-cooler unit, through said fourth piston working gas passage, as said fourth piston moves to T.D.C., allowing said second working gas to flow into said second heating means to cyclically perform a second Stirling cycle.

wherein said first and second cycles are 180° out of phase with one another.

4,498,299

VALVE ASSEMBLY

David L. Brademeyer, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1983, Ser. No. 526,668

Int. Cl.³ B60T *11/08*

U.S. Cl. 60—562 **8 Claims**

1. In a quick take-up brake master cylinder assembly having a brake fluid reservoir housing defining a reservoir chamber, a master cylinder housing with a bore therein providing a brake quick take-up pressure generating chamber and at least one brake actuating pressure chamber, fluid compensation ports in said master cylinder housing operatively communicating with said bore and said reservoir chamber, support means formed as a part of said master cylinder housing and providing a mount for said reservoir housing, said support means also having a

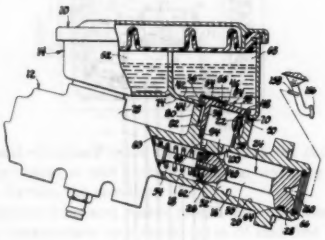
recess providing fluid access between said quick take-up chamber and said reservoir chamber through at least one of said compensation ports;

a quick take-up fluid pressure and flow control valve assembly comprising:

a valve housing received in said support means recess and having a generally cylindrical wall portion defining a valve chamber therein, and a cap portion on the upper end of said wall portion, said valve chamber having its lower end openly communicating with said quick take-up chamber through said at least one of said compensation ports;

at least two passages formed through said valve housing and providing controlled brake fluid communication between said valve chamber and said reservoir chamber;

and first and second normally closed brake fluid pressure and flow control valves respectively associated with different ones of said at least two passages to control brake



fluid flow and pressure therethrough, one of said valves opening at a predetermined increase in brake fluid pressure in said valve chamber generated in said quick take-up chamber and at a pressure value sufficient for brake take-up, the other of said valves opening in response to a decrease in brake fluid pressure in said valve chamber below the brake fluid pressure in said reservoir chamber to permit substantially free brake fluid pressure and flow from said reservoir chamber to said valve chamber and thence to said quick take-up chamber through said at least one of said compensation ports;

said valves each including a movable valve member mounted on and supported by said valve housing and a valve seat means formed by an integral part of said valve housing at the end of each of said associated passages, and yieldable valve biasing means, which may be a part of each of said valve member, continuously urging each of said valve members toward engagement with its valve seat means.

4,498,300

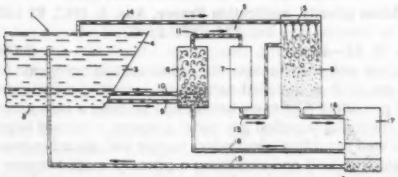
DUAL PURPOSE SOLAR POND FOR EVAPORATION AND HEAT STORAGE

Gad Assaf, Rehovot, and Benjamin Doron, Jerusalem, both of Israel, assignors to Solmat Systems, Ltd., Yavne, Israel

Filed Dec. 28, 1982, Ser. No. 453,938

Int. Cl.³ F03G *7/02*

U.S. Cl. 60—641.8 **3 Claims**



1. A method for using a solar pond power plant comprising a salt water solar pond that includes an upper convective layer on which solar radiation is incident, a non-convective halocline having a downwardly directed density gradient below the convective layer, and a heat storage layer below the halocline, and having a heat machine that includes a vaporizer and a condenser for generating power, said method comprising:

(a) exchanging brine between the heat storage layer and the vaporizer of the heat machine for generating power;

(b) exchanging brine between the convective layer and the condenser for adding heat to the convective layer thereby increasing the rate of evaporation therefrom and increasing the salinity thereof; and

(c) periodically withdrawing brine from the convective layer to an evaporation pond where the brine is concentrated by evaporation, and replacing the withdrawn brine with make-up brine that is less dense than the withdrawn brine.

4,498,301

COOLING DEVICE OF STEAM TURBINE

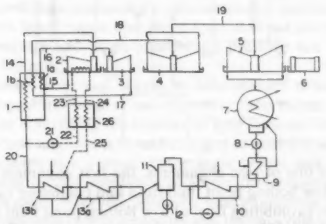
Kuniyoshi Tsubouchi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1983, Ser. No. 466,935

Claims priority, application Japan, Feb. 17, 1982, 57-22636

Int. Cl.³ F01K *17/04*

U.S. Cl. 60—657 **6 Claims**



1. A cooling device for a steam turbine, the cooling device comprising:

condenser means for condensing steam supplied from the steam turbine;

feedwater means for supplying feedwater from the condenser means to a boiler means;

a first cooling fluid means branching from the feedwater means for supplying a portion of the feedwater to to the steam turbine as a cooling fluid; and

a second cooling fluid means communicating with said first cooling fluid means and including a regenerating heat exchanger means for heating the cooling fluid, said second cooling fluid means being connected to the steam turbine so that the cooling fluid heated by said heat exchanger means is supplied to portions of the steam turbine requiring a cooling.

4,498,302

THERMOMECHANICAL-CONVERSION ENGINE, ESPECIALLY AN ENGINE WORKING WITH A LOW-BOILING-POINT FLUID

Salah Djelouah, Loiret, France, assignor to Sorelec, Loiret, France

Filed Nov. 17, 1982, Ser. No. 442,382

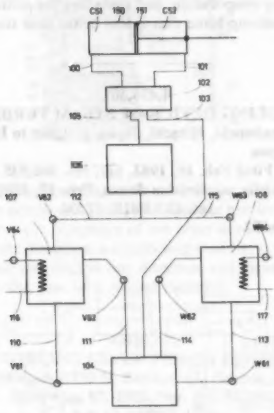
Claims priority, application France, Nov. 19, 1981, 81 21709; Jan. 14, 1982, 82 00535

Int. Cl.³ F01K *25/10*

U.S. Cl. 60—671 **5 Claims**

1. A thermomechanical-conversion engine system comprising a thermomechanical-conversion engine capable of being driven by a low boiling point fluid and a closed circuit for providing low boiling point fluid to and receiving low boiling point fluid from the thermomechanical-conversion engine, said

circuit comprising a condenser, an evaporator, a first reservoir, a second reservoir, a line connecting an outlet of the engine to an inlet of said condenser, a line connecting an outlet of said condenser to an inlet of said first reservoir, a line connecting an outlet of said condenser to an inlet of said second reservoir, a line connecting the outlet of said first reservoir to an inlet of said evaporator, a line connecting the outlet of said second reservoir to an inlet of said evaporator, a line connecting an outlet of said evaporator to an inlet of said first reservoir, a line connecting an outlet of said evaporator to an inlet of said second reservoir. a line connecting an outlet of said evaporator to an inlet of the engine, and means for alternating aligning the



circuit in one of two alignments, the first alignment enabling flow of low boiling point fluid from said condenser to said first reservoir, prohibiting flow of low boiling point fluid from said condenser to said second reservoir and permitting flow of low boiling point fluid between said evaporator and said second reservoir, the second alignment enabling flow of low boiling point fluid from said condenser to said second reservoir, prohibiting flow of low boiling point fluid from said condenser to said first reservoir and permitting flow of low boiling point fluid between said evaporator and said first reservoir, said first and second reservoirs having means to condense low boiling point fluid.

4,498,303

CARBON DIOXIDE LIQUIFICATION SYSTEM

Albert N. Heichberger, P.O. Box 16562, Jacksonville, Fla. 32245

Filed Jul. 6, 1983, Ser. No. 511,270
Int. Cl.³ F25J 3/02
U.S. Cl. 62—21 **11 Claims**

1. A process for selectively condensing carbon dioxide from a source gas flow, comprising:

providing an initial quantity of liquid carbon dioxide in a vertical configuration including, in ascending order, a lower removing region, a gas distributing region, a condensing region, and a gas collecting region;

said liquid carbon dioxide being at selected temperature and pressure conditions above condensation conditions for all components of said source gas except carbon dioxide;

introducing said flow of source gas into said gas distributing region and distributing said flow in said liquid carbon dioxide within said distributing region;

removing heat from said liquid carbon dioxide within said condensing region, as distributed gas rises in said liquid carbon dioxide from said distributing region through said condensing region, at a heat removal rate sufficient to maintain said selected temperature condition and to selectively condense substantially all carbon dioxide from said distributed gas;

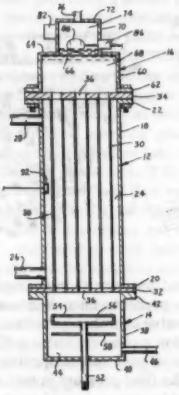
collecting noncondensed gas in said gas collecting region as noncondensed gas rises from said liquid carbon dioxide above said condensing region; and

removing substantially only carbon dioxide liquid from said lower removing region below said gas distributing region.

8. Apparatus for selectively condensing carbon dioxide from a source gas flow, comprising:

a chamber configured to contain a quantity of liquid carbon dioxide in vertically arranged regions including, in ascending order, a lower removing region, a gas distributing region, a condensing region, and a gas collecting region;

inlet means for introducing said flow of source gas into said gas distributing region and distributing said flow in said liquid carbon dioxide within said distributing region;



cooling means for removing heat from said liquid carbon dioxide within said condensing region, as distributed gas rises in said liquid carbon dioxide from said distributing region through said condensing region;

said condensing region being sized and shaped and arranged such that as distributed gas passes through said liquid carbon dioxide in direct heat exchange relationship sufficient heat exchange occurs to selectively condense substantially all carbon dioxide from said distributed gas;

collecting means for collecting noncondensed gas in said gas collecting region as noncondensed gas rises from said liquid carbon dioxide above said condensing region; and

outlet means for removing carbon dioxide liquid from said lower removing region below said gas distributing region.

4,498,304

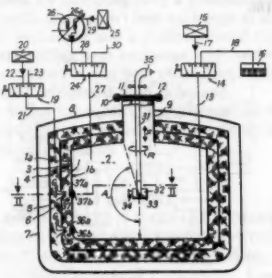
STORAGE TANK FOR CRYOGENIC LIQUEFIED GAS

Jean R. Guilhem, Sainte-Adresse, France, assignor to Gaz de France and Applied Thermodynamics & LNG Service, both of, France

Filed Jul. 26, 1983, Ser. No. 517,515
Claims priority, application France, Aug. 3, 1982, 82 13559
Int. Cl.³ F17C 13/02
U.S. Cl. 62—49 **7 Claims**

1. In a tank construction adapted to contain cryogenic liquefied gas such as liquefied natural gas including a first interior wall providing a primary barrier and defining a tank chamber for containing liquefied gas under pressure, a second intermediate wall providing a secondary barrier and spaced outwardly of said first wall and providing a primary space between the first and second walls, a third exterior wall outwardly of the second wall and providing a secondary space between the second and third walls, thermal insulating material filling said primary space, thermally insulating material filling the second-

ary space, a line communicating the tank chamber with an inert gas supply adapted, after the liquefied gas has been unloaded from the tank chamber, to push any remaining liquefied gas out of the tank chamber, and a line communicating the secondary space with a supply of safety gas, the safety gas having, under the pressure prevailing in the primary space, a sublimation temperature lower than the temperature prevailing in service



within said secondary space and higher than the primary barrier temperature at said chamber prior to warming-up of the primary barrier, the provision of:

a temperature sensing means in said tank chamber for sensing temperatures at selected areas of said first wall after unloading of said liquefied gas;

and means for introducing and supporting said temperature sensing means in said tank chamber.

4,498,305

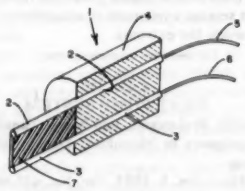
PROBE FOR MEASURING ELECTRICAL CONDUCTANCE

Joseph A. Bzdula, Fulton, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 353,768, Mar. 1, 1982, Pat. No. 4,449,396. This application Oct. 31, 1983, Ser. No. 547,313

Int. Cl.³ F25B *43/02*; G01K *13/00*

U.S. Cl. 62—84 **1 Claim**



1. A method of monitoring water concentration in the refrigerant of a hermetic vapor compression refrigeration system having an oil lubricated compressor drive train, which comprises:

placing a probe for measuring electrical conductance in the lubrication oil for the compressor drive train;

measuring the conductance of the probe during a selected time period of operation of the refrigeration system to determine a reference level of conductance for the probe;

measuring the conductance of the probe during regular operation of the refrigeration system; and

comparing the conductance measured during regular operation of the refrigeration system to the reference level of conductance to determine the change in water concentration in the oil corresponding to the change in water concentration in the refrigerant of the refrigeration system.

4,498,306

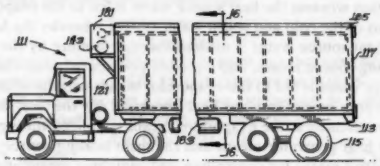
REFRIGERATED TRANSPORT

Lewis Tyree, Jr., 145 Briarwood Ave. North, Oak Brook, Ill. 60521

Filed Nov. 9, 1982, Ser. No. 440,403

Int. Cl.³ F25D *15/00*

U.S. Cl. 62—119 **20 Claims**



1. A refrigerated transport comprising

means defining an insulated enclosure including a plurality of walls and a floor for holding a quantity of product at a storage temperature below ambient temperature, and including opening means for inserting and removing said product,

means for holding a cryogen reservoir,

thermosyphon means in heat-transfer relationship with said walls and floor containing a vaporizable refrigerant which exhibits liquid-vapor two-phase form at about said storage temperature and at an equilibrium pressure not greater than 500 psia.,

intermediate heat sink means in heat-transfer relationship with upper portions of said thermosyphon means, and

means for controlling the transfer of heat from said intermediate heat sink means to said cryogen to maintain said heat sink means at a desired temperature below said storage temperature but substantially above the temperature of said cryogen reservoir, whereby heat attempting to enter said enclosure is intercepted by said thermosyphon means, transferred to said intermediate heat sink and ultimately absorbed by said cryogen.

4,498,307

ABSORPTION COLD AND WARM WATER SYSTEM UTILIZING SOLAR HEAT

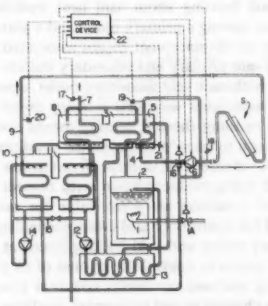
Yozo Hibino; Kohji Kamejima, both of Ibaraki, and Yasuaki Nara, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 11, 1983, Ser. No. 493,704

Claims priority, application Japan, May 12, 1982, 57/78288

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—148 **10 Claims**



1. An absorption cold and warm water system comprising an evaporator means, solar heat generator means for heating water by solar heat so as to provide heat source water, a main

heating source means a supply means for feeding the heat source water to the cold and warm water system, switching means for switching the supply means in such a manner that the cold and warm water system selectively functions as a warm water system relying on heating by the main heating source means without receiving a supply of heat source water, said switching means being adapted to be displaced to a first position wherein the heat source water is fed to the evaporator means of the cold and warm water system whereby the heat of the heat source water is utilized through heating by the main heating source means, and a second position wherein the heat source water is fed to the evaporator means and the solar heat generator means and the heat possessed by the heat source water released at the evaporator means is utilized through the solar heat generator means and the main heating source; and

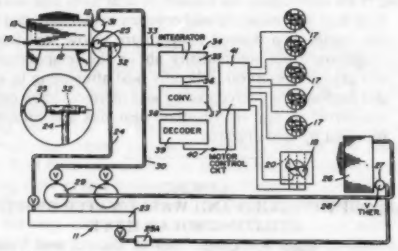
control means for controlling said switching means and said main heating source means in accordance with a temperature of the heat source water.

4,498,308

NON-FLOODING REMOTE AIR COOLED CONDENSERS

Parker V. Phillips, Brantford; Ness Lakdawala, St. Lambert, and Michel Lecompte, Mont St. Hilaire, all of Canada, assignors to Hussmann Store Equipment Limited, Brantford, Canada

Filed Sep. 30, 1982, Ser. No. 430,699
Int. Cl.³ F25B *39/04*
U.S. Cl. 62—184 **14 Claims**



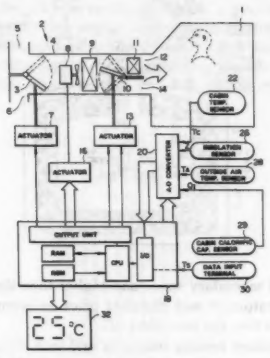
1. An outdoor air cooled condenser for use in a refrigeration system having at least one refrigeration circuit, said condenser including a condenser coil assembly having a condenser coil and a heat transfer surface for said refrigeration circuit, a housing having air inlet and outlet means for the passage of air through said housing about said heat transfer surface, said outlet means having a primary outlet and a plurality of secondary outlets, air displacement means associated with a respective one of said primary and secondary outlets, damper means associated with each said secondary outlet, controllable damping means associated with said primary outlet to control the size of the opening thereof, sensing means connected to said condenser coil to sense predetermined condition of a refrigerant in said condenser coil, control circuit means for monitoring said sensed refrigerant condition with respect to a predetermined ideal condition set point value for said refrigeration system and for controlling said controllable damping means of said primary outlet and said air displacement means of said secondary outlets to control the amount of air passing through said housing and said condenser coil heat transfer surface in response to changes in said refrigerant condition resulting from heat rejection load changes in said coil or entering air temperature changes in said housing, whereby to substantially maintain said refrigeration system operating at said ideal condition set point value.

4,498,309

BLOWER CONTROL ARRANGEMENT FOR AIR CONDITIONING UNIT OR THE LIKE

Shinma Kobayashi, Hiratsuka, and Eiji Ohsawa, Ebina, both of Japan, assignors to Nissan Shatai Company, Limited, Hiratsuka, Japan

Filed Aug. 26, 1983, Ser. No. 526,634
Claims priority, application Japan, Aug. 31, 1982, 57-150144
Int. Cl.³ F25D *17/04*
U.S. Cl. 62—186 **34 Claims**



1. An air conditioning unit for a vehicle having a cabin, comprising:

a blower for inducing air to flow through a duct of said air conditioning unit;

a heat exchanger arrangement associated with said duct and arranged to vary the temperature of the air induced to flow through said duct;

a sensor arrangement for sensing at least one parameter affecting the environment of said cabin and outputting an indication of said parameter;

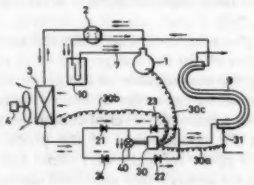
a control circuit for controlling the energization of said blower according to an energization schedule, a first extremum of which is selectively varied in response to the output of said sensor arrangement, and for varying the rate at which said schedule proceeds from said first extremum to a second extremum in accordance with the difference between the extrema.

4,498,310

HEAT PUMP SYSTEM

Masami Imanishi, Wakayama, and Naoki Tanaka, Hyogo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 5, 1983, Ser. No. 455,640
Claims priority, application Japan, Jan. 9, 1982, 57-2072
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—211 **8 Claims**



1. A heat pump system including a utilization side heat exchanger, a non-utilization side heat exchanger, a compressor for compressing and circulating a refrigerant fluid through said

utilization side heat exchanger and said non-utilization side heat exchanger, a four-way valve for controlling a direction of refrigerant fluid flow through said utilization side heat exchanger and said non-utilization side heat exchanger, and an expansion valve provided between said utilization side heat exchanger and said non-utilization side heat exchanger for selectively controlling the circulation rate of said refrigerant fluid in accordance with an amount of valve opening of said expansion valve, wherein the improvement comprises:

sensing means for detecting only a predetermined temperature of media undergoing heat exchange at said utilization side heat exchanger and a predetermined temperature of media undergoing heat exchange with said refrigerant at said non-utilization side heat exchanger regardless of said direction of refrigerant fluid flow; and

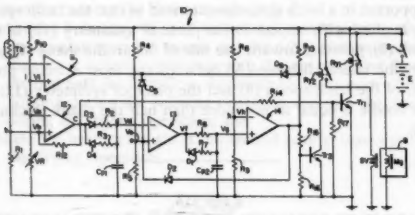
controller means for controlling said amount of opening of said expansion valve in accordance with the sensed predetermined temperatures.

4,498,311

CONTROL DEVICE FOR A VARIABLE DISPLACEMENT COMPRESSOR IN AN AIR CONDITIONING SYSTEM

Riichi Sakano, Saitama, and Tadayoshi Ubakata, Gunma, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Mar. 7, 1983, Ser. No. 472,497
Claims priority, application Japan, Mar. 5, 1982, 57-30423[U]
Int. Cl.³ F25B 1/00
U.S. Cl. 62—227 **13 Claims**



11. A control device for a compressor in an air conditioning system, said compressor having a magnetic clutch to drive said compressor and a variable displacement device to change the cooling capacity of said compressor between a small and a large volume, said control device comprising:

a voltage source;

magnetic clutch control means connected to said voltage source for actuating said magnetic clutch to drive said compressor, said magnetic clutch control means including a thermistor for sensing the temperature of the air blown by the air conditioning system and a first comparator for comparing the sensed temperature to a first predetermined temperature, said first comparator generating a control signal for actuating said magnetic clutch when the sensed temperature is above the first predetermined temperature;

first cooling capacity control circuit means connected to said voltage source for actuating said variable displacement device to decrease the cooling capacity of said compressor, said first cooling capacity control means including a second comparator operatively connected to said first comparator for determining the rate of operation of said compressor and a third comparator operatively connected to said second comparator for comparing the determined rate of operation of said compressor to a predetermined rate, said third comparator generating a control signal to actuate said variable displacement device to decrease the cooling capacity of said compressor when the determined rate of operation of the compressor is below the predetermined rate; and

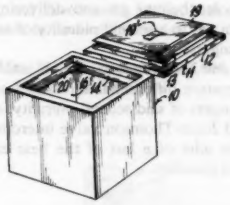
second cooling capacity control circuit means connected to said voltage source for actuating said variable displacement device to increase the cooling capacity of said compressor, said second cooling capacity control means including a fourth comparator for comparing the sensed temperature of the air blown by the air conditioning system to a second predetermined temperature, said fourth comparator generating a signal to actuate said variable displacement device to increase the cooling capacity of said compressor when the sensed temperature is above the second predetermined temperature.

4,498,312

METHOD AND APPARATUS FOR MAINTAINING PRODUCTS AT SELECTED TEMPERATURES

Edward P. Schlosser, 509 Lawton Ave., Ridgefield, N.J. 07657

Filed Nov. 23, 1983, Ser. No. 554,525
Int. Cl.³ F25D 3/08
U.S. Cl. 62—457 **7 Claims**



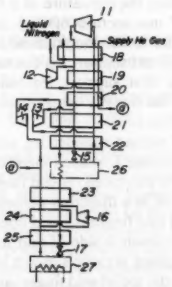
1. Apparatus for maintaining products at a desired temperature comprising a chest of essentially rectangular configuration formed of heat insulating material and a plurality of relatively flat, hollow, sealed containers lining the sides, bottom and top of the inside of said chest, at least certain of said containers being formed to interlock one with others to hold them in position within the chest, each of said containers including a recessed opening and cooperating removable plug and adapted to be filled with a liquid having a high boiling point and a low freezing point, said containers upon being filled with said liquid and subjected to a selected temperature until the liquid reaches said selected temperature and then inserted in said chest, products in said chest will be maintained at approximately the selected temperature for an extended period of time.

4,498,313

COMPACT HELIUM GAS-REFRIGERATING AND LIQUEFYING APPARATUS

Kenji Hosoyama, Ibaragi, and Hiromi Hirabayashi, Tsuchiura, both of Japan, assignors to National Laboratory for High Energy Physics, Ibaragi, Japan

Filed Dec. 27, 1983, Ser. No. 565,606
Claims priority, application Japan, Dec. 27, 1982, 57-233113
Int. Cl.³ F25D 9/00
U.S. Cl. 62—514 R **7 Claims**



1. A helium gas-refrigerating and liquefying apparatus comprising:

a neon gas-refrigerating and liquefying circuit system for pre-cooling helium gas, comprising:

a turbo-type gas compressor for compressing neon gas and delivering the compressed neon gas to a first plurality of interconnected heat exchangers;

at least one turbo-type neon gas expansion machine maintaining a temperature differential across at least one of the heat exchangers of said first plurality;

a first Joule-Thomason valve interconnecting an outlet and an inlet of a last of the heat exchangers of said first plurality; and

means for passing helium gas through at least one of the said heat exchangers of said first plurality to pre-cool said helium gas;

a helium gas-refrigerating and liquefying circuit system for further cooling and liquefying said precooled helium gas comprising:

a turbo-type helium gas compressor for compressing said precooled helium gas and delivering the compressed helium gas to a second plurality of interconnected heat exchangers;

at least one helium gas expansion machine maintaining a temperature differential across at least one of the heat exchangers of said second plurality; and

a second Joule-Thomson valve interconnecting an outlet and an inlet of a last of the heat exchangers of said second plurality.

4,498,314

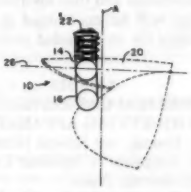
FINGERNAIL JEWELRY DEVICE

Diane H. Okamura, 20824 Chester St., Castro Valley, Calif. 94546

Filed Jul. 27, 1983, Ser. No. 517,795

Int. Cl.³ A44C *25/00*

U.S. Cl. 63—2 **6 Claims**



1. A fingernail jewelry device comprising

a first elongated arcuate support leg having a curvature approximating the curvature of a fingernail as defined by the line of intersection of said fingernail with a plane perpendicular to the longitudinal axis of said fingernail,

a second elongated support leg connected at one end to one end of said first support leg, said second support leg adapted to frictionally engage said fingernail along the underside thereof,

said first and second support leg combination defining an elongated arcuate U-shaped member, open at one end and adapted to be emplaced on said fingernail from one side of said fingernail in a direction perpendicular to the longitudinal axis of said fingernail said open end of said U-shaped member proximate a side of said fingernail,

said first elongated arcuate support leg adapted to frictionally engage the top of said fingernail and having the longitudinal axis of said first support leg disposed perpendicular to the longitudinal axis of said fingernail, and

means for mounting at least one decorative object on said first leg.

4,498,315

LATCH NEEDLE FOR MACHINES FOR PRODUCING KNITTED GOODS

Werner Wohlgemuth, Albstadt, Fed. Rep. of Germany, assignor to Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft, Albstadt, Fed. Rep. of Germany

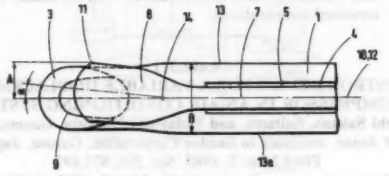
PCT No. PCT/DE82/00197, § 371 Date May 16, 1983, § 102(e) Date May 16, 1983, PCT Pub. No. WO83/01259, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 6, 1982, Ser. No. 503,153

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1981, 3140386

Int. Cl.³ D04B *35/04*

U.S. Cl. 66—121 **2 Claims**



1. A latch needle for machines for producing knitted goods, having a needle shank, a needle head and a latch pivotably supported in a latch slot, characterized in that the latch spoon (8) is tilted with respect to the plane of symmetry (10) of the latch (5), pointing toward one side of the needle shank (1), and that the lateral distance (A) between the most extreme point (11) of the latch spoon (8) and the plane of symmetry (12) of the needle is equal to not more than half the shank thickness (B).

4,498,316

WARP-KNIT STRINGER TAPE FOR SLIDE FASTENERS

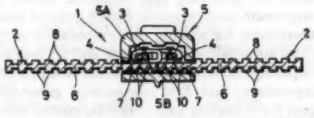
Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 28, 1983, Ser. No. 535,078

Claims priority, application Japan, Sep. 29, 1982, 57-147738[U]

Int. Cl.³ D04B *7/04*

U.S. Cl. 66—196 **11 Claims**



1. A stringer tape for a slide fastener having a pair of rows of coupling elements and a slider threaded thereon, comprising:

(a) an elongate warp-knit fabric including a longitudinally stretchable elongate web portion, and a longitudinally non-stretchable marginal portion extending along one longitudinal edge of said web portion for supporting one coupling element row of the slide fastener and also for being in contact with the slider;

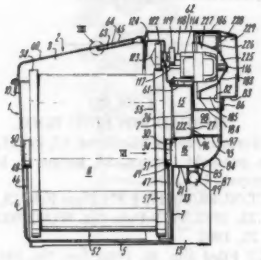
(b) said web portion having a double-faced knit structure having a plurality of longitudinal wales on opposite faces thereof, said marginal portion having a single-faced knit structure having a plurality of longitudinal wales on only one face thereof; and

(c) said longitudinal wales at said web portion being composed of textured yarns, said longitudinal wales at said marginal portion being composed of multifilament yarns.

4,498,317
LAUNDRY HANDLING MACHINE, ROTATIONAL SPEED REDUCTION ARRANGEMENT AND RINSING DEVICE

Albert A. P. Thysen, Bilzen, and Gilbert L. J. Timmermans, Tongeren, both of Belgium, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 18, 1982, Ser. No. 349,805
Int. Cl.³ D06F *25/00, 33/02, 39/02*
U.S. Cl. 68—12 R 39 Claims



1. A laundry treating machine for performing both a washing and a drying operation, including a housing having a cover, a vat, a drum mounted in the vat for turning about an axis and a motor for turning the drum, comprising:

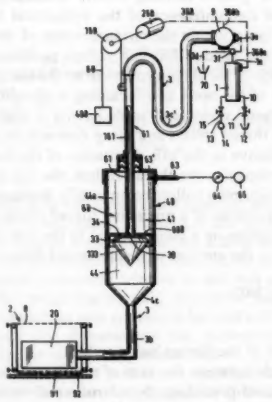
means for inducing a flow of air through two separate paths, one passing over the motor and the other circumventing the motor before combining with the air emerging from the first path for joint flow therewith to the exterior of the housing during the washing operation and into the drum during the drying operation; and

means for heating the air in the second path at least during the drying operation.

4,498,318
APPARATUS FOR SUPPLYING FOAM TO A CONSUMER

Mathias Mitter, Falkenstr. 57, D-4815 Schloss Holte, Fed. Rep. of Germany

Filed Dec. 15, 1982, Ser. No. 450,108
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3150936; Oct. 9, 1982, 3237591
Int. Cl.³ D06B *1/08*
U.S. Cl. 68—200 42 Claims

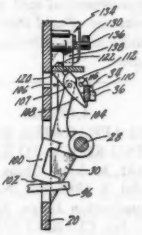


1. Apparatus for applying foam to a substrate, comprising at least one consumer having a hollow rotary screen through which at least the liquid fraction of foam passes into contact with the consumer and an applicator in the interior of said screen; means for feeding foam to said applicator including at least one foam generator having foam discharging outlet means and means for connecting said outlet means with the consumer, said connecting means including at least one conduit and at least one pressurized foam storing device in said conduit; and compensating means for varying the effective volume of said storing device as a function of variations of the quantity of foam and the resulting fluctuations of pressure in said storing device, said compensating means including a portion which is disposed in the interior of said storing device.

4,498,319
EXIT DEVICE

Walter O. Balducci, and Theodore H. Miller, both of New Britain, Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed May 24, 1982, Ser. No. 381,604
Int. Cl.³ E05B *65/10*
U.S. Cl. 70—92 12 Claims



1. An exit device comprising a case, a latch bolt supported by and moveable relative to said case between projected and retracted positions, a manual operator, an action lever pivotably mounted in said case and adapted to be pivoted by said manual operator between an open and closed position, a locking member mounted in said case for movement between a locked and unlocked position, and means mounted on said action lever adjacent one end thereof engageable with said locking member when said locking member is in the unlocked position for causing retraction of said latch bolt when said action lever is pivoted into its open position, and free of engagement of said locking member and cammed about said latch bolt when said locking member is in the locked position, whereby said latch bolt remains projected when said action lever is pivoted into its open position.

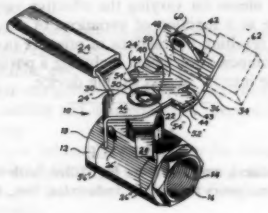
4,498,320
APPARATUS FOR LOCKING A CONTROL DEVICE

Jerry D. Mullis, Matthews, N.C., assignor to Conbraco Industries, Inc., Matthews, N.C.

Filed Sep. 2, 1981, Ser. No. 298,659
Int. Cl.³ F16K *35/00*
U.S. Cl. 70—177 22 Claims

1. Apparatus for locking a control device of the type having a body and an operating handle mounted thereon for selective shifting between a first and a second position, comprising movable engagement means adapted to be movably mounted on said control device for selective disposition both when said handle is in its said first position and when said handle is in its said second position in simultaneous engagement of said body and said handle to restrain said handle from movement and for selective disengagement in both said positions from at least one of said body and said handle to permit shifting to said handle, said movable engagement means having shoulder means for selective disposition between said first and second positions of

said handle and in abutment with said handle, leg means operatively arranged relative to said shoulder means for engaging said body when said shoulder is disposed between said first and second positions of said handle and is in abutment therewith, and means for permitting selective movement of at least one of said shoulder means and leg means relative to the other thereof and generally normal with respect to the shifting movement of



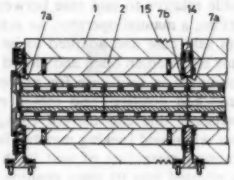
said handle for selective positioning of said shoulder means and said leg means for simultaneous abutment of said handle with said shoulder means and engagement of said body with said leg means to prevent movement of said handle and for selective disengaging of at least one of said shoulder means and said leg means from said handle and said body, respectively, to permit shifting of said handle.

4,498,321

METHOD OF AND APPARATUS FOR FORMING LONG METAL TUBING STOCK TO TAPERED SHAPE

Kelichiro Yoshida, 641, Mobara, Chiba, Japan (297)

Filed Jul. 8, 1983, Ser. No. 512,126
Claims priority, application Japan, Jul. 9, 1982, 57-120346
Int. Cl.³ B21J *7/16*
U.S. Cl. 72—76 **6 Claims**



1. An apparatus for forming a relatively long metal tubing stock to a tapered shape by means of the swaging process, comprising a plurality of swaging units which are arranged in a serial tandem configuration, each of said swaging units including:

an outer cylindrical-shape flywheel;

an inner cylindrical-shape assembly mounted inside said outer cylindrical-shape flywheel, said assembly including hammer rolls arranged at regular intervals around said assembly and spacer members each interposed between the two adjacent hammer rolls;

a cylindrical-shape spindle mounted inside said inner cylindrical-shape assembly, said spindle having two longitudinal bucker grooves extending in parallel with the central axis of said spindle and diametrically opposed relative to each other, each of said two bucker grooves having a series of regularly spaced apertures formed in the bottom in the longitudinal direction thereof and aligned with the apertures in the other bucker grooves, a series of striking rods each inserted into each of said apertures movably in the radial direction of said spindle, and a bucker mounted between said series of striking rods in each of said bucker grooves and said inner cylindrical-shape assembly so that said bucker is pressed down by said hammer rolls in said inner assembly;

working die means mounted inside said spindle, said working die means having two split parts extending longitudinally thereof; and

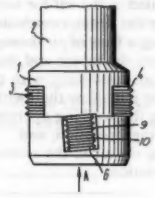
driving means having output connected to said outer cylindrical-shape flywheel, wherein each of said working die means in each of said swaging units is interconnected one after another to form a continuous working sequence, and each of said driving means is connected to each of said outer cylindrical-shape flywheel.

4,498,322

THREAD-ROLLING TOOL

Gennady A. Toropov, ulitsa Mironova, 17, kv. 45, and Stepan P. Shamenko, prospekt Geroev, 33, korpus 1, kv. 45, both of Dnepropetrovsk, U.S.S.R.

PCT No. PCT/SU80/00117, § 371 Date Feb. 23, 1982, § 102(e) Date Feb. 23, 1982, PCT Pub. No. WO82/00109, PCT Pub. Date Jan. 21, 1982
PCT Filed Jun. 30, 1980, Ser. No. 355,754
Int. Cl.³ B21H *03/08*
U.S. Cl. 72—118 **1 Claim**



1. A thread-rolling tool comprising:

a unitary cylindrical body having a tail portion for fixing said body in a rotatable spindle;

a plurality of thread rollers uniformly disposed around the circumference of the cylindrical body, the axes of said rollers lying within the circumference of the cylindrical body and being in an angular position relative to the axis of rotation of the body at an angle equal to the lead angle of the helical line of the thread being rolled;

a plurality of groove-forming rollers uniformly disposed around the circumference of the cylindrical body with their axes lying within the circumference of the cylindrical body, the groove forming rollers positioned on the opposite side of the thread rollers from the the tail relative to the axis of the body and including a plurality of alternate peripheral crests and roots having a pitch equal to that of the thread rollers and being disposed in an angular position relative to the axis of rotation of the body and at an angle relative to the thread rollers, the top portions of the groove-forming rollers being axially displaced relative to the top portions of a preceding thread roller, if viewed in the projection on a plane normal to the axis of rotation of the body, the amount of displacement being:

$$(P/2)-P\beta/360°),$$

where

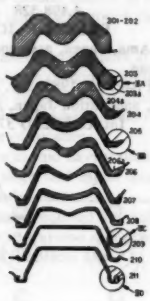
P is a pitch of the thread being rolled,

β is an angle between the axes of rotation of the groove-forming and preceding thread rollers if viewed in the projection on a plane normal to the axis of rotation of the body.

4,498,323
METHOD OF ROLLING SHEET PILING

Jacques Metzdorf, Esch/Alzette, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Sep. 28, 1982, Ser. No. 426,064
Claims priority, application Luxembourg, May 25, 1982, 84169
Int. Cl.³ B21B 1/08
U.S. Cl. 72—177 5 Claims



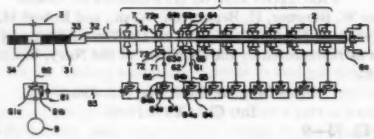
1. In a method of rolling inertial sheet piling in which a generally U-shaped sheet pile is formed with a pair of flanges joining a web and each of the flanges has a hook-shaped extremity, said method comprising three initial rolling passes for roughing a blank such that a bulge is formed at a free edge of each flange, and in three final rolling passes the hook shape is imparted to each extremity by folding, the improvement which comprises:

flat rolling each bulge between substantially parallel generally cylindrical ridge-free rolling surfaces in at least one pass following the formation thereof and without prior upsetting of said bulge whereby a grain structure parallel to the flat rolled bulge is formed prior to the folding passes.

4,498,324
RESTRAINED MANDREL MILL INLET TABLE

Shinji Akita, and Megumu Tanaka, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,326
Claims priority, application Japan, Mar. 25, 1982, 57-46342
Int. Cl.³ B21B 17/10
U.S. Cl. 72—208 7 Claims



1. An inlet table for a restrained mandrel mill comprising:

a plurality of roll means arranged in the direction of a pass line to support a mandrel bar /or a shell to be rolled; and

a restrained bar coupled to said mandrel bar and mounted for reciprocal movement relative to said roll means;

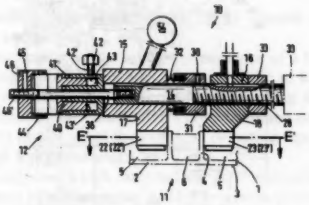
means for reciprocating said restrained bar; gear means interconnecting said restrained bar and said roll means for mechanically transmitting the movement of said restrained bar to said roll means; and

wherein each of said roll means includes at least one roll mounted on an arm supported so that the arm can be swung reversibly about a rotary shaft in response to a forward movement or a backward movement of said restrained bar, whereby at least one of said plurality of roll means supports said mandrel bar and/or the shell to be rolled on the pass line.

4,498,325
METHOD FOR SHAPING PANELS BY A BENDING OPERATION, IN PARTICULAR PANELS FOR AIRCRAFT FUSELAGE SKIN, AND APPARATUS FOR IMPLEMENTING SUCH METHOD

Helmut Reccius, Munich, and Werner Pönitzsch, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Walter Eckold GmbH & Co. KG, Andreasberg and Dornier GmbH, Friedrichshafen, both of, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,472
Int. Cl.³ B21D 11/20
U.S. Cl. 72—302 10 Claims



1. A method for shaping panels made of a plastically deformable material having both a skin portion and a plurality of intersecting stiffening and secondary ribs on one surface of said skin portion, comprising the steps of transmitting force along said stiffening ribs to plastically vary the length thereof, said force being transmitted to a stiffening rib by engaging the stiffening rib and applying force at the points of intersection between said stiffening and secondary ribs at a predetermined distance spaced outwardly from said skin portion whereby said skin portion is subjected to bending forces without substantial tensioning or crushing stresses being imparted thereto.

4,498,326
APPARATUS AND PROCESS FOR FORMING ARTICLES BY HEADING

David S. Brandt, Oneonta, and Samuel J. Costello, Nineveh, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed May 27, 1983, Ser. No. 499,103
Int. Cl.³ B21F 5/00
U.S. Cl. 72—318 20 Claims

19. Apparatus for forming articles from elongated blanks by heading comprising:

an axially fixed holder plate;

at least one holder carried by said holder plate having an opening adapted to receive one end of an elongated blank, said holder also including means for clamping a received blank end disposed therein;

a first tooling plate carrying a die having an opening locatable opposite said holder carried by said holder plate;

means for mounting said first tooling plate to be axially movable toward and away from said holder plate;

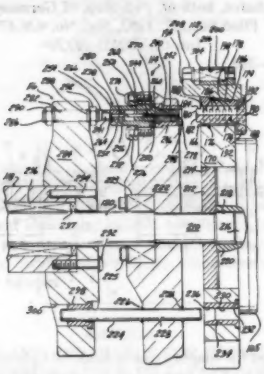
means for causing controlled timed advance and retraction of said first tooling plate consisting of movement of said first tooling plate towards and away from said holder plate bringing said die opening from a position remote from said holder opening to a position overlying said holder opening to create a closed end die opening with said blank protruding thereinto;

a second tooling plate juxtaposed to said first tooling plate on a side thereof remote from said holder plate carrying at

least one punch axially aligned and extending towards said at least one die opening in said first tooling plate;

means for mounting said second tooling plate for independent axial movement towards and away from said first tooling plate;

means for causing controlled timed advance and retraction of said second tooling plate comprising movement of said second tooling plate toward and away from said first tooling plate respectively to cause advance of said at least one punch into said at least one die opening to enable heading of a blank retained in said at least one holder in said at least one die opening;



means for successively feeding blanks into said at least one holder; and

means for ejecting formed articles from said at least one holder after each forming cycle, whereby said apparatus enables head forming of blanks successively introduced into said at least one holder;

said at least one holder further including a recessed counterbore at the surface thereof facing said die and of a larger diameter than said die opening allowing radial expansion of a portion of said blank disposed therein to form a shoulder intermediate the length of said formed blank as said punch is advanced to head form said blank.

4,498,327

CYLINDER LOCKS AND KEYS THEREFOR

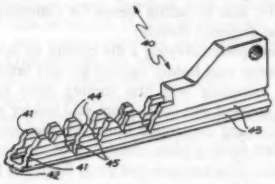
Brian F. Preddey, Miranda, and Laurence P. Mills, Crows Nest, both of Australia, assignors to Taboola Pty. Ltd., New South Wales, Australia

Filed Mar. 29, 1982, Ser. No. 362,795

Claims priority, application Australia, Mar. 30, 1981, PE8207; Jul. 8, 1981, PE9648

Int. Cl.³ B21D *53/42*

U.S. Cl. 72—341 **4 Claims**



1. A method of forming a key, said method comprising the steps of:

(a) providing a key blank of generally v-shaped transverse cross section so as to define two longitudinally extending transversely converging key blades joinded by a longitudinal base;

(b) cutting a key profile in at least one of the blades so as to provide at least one groove extending inwardly from a longitudinal edge of the said one blade; and

(c) bending the blades towards each other so as to define in combination with the base a key of generally u-shaped transverse cross section.

4,498,328

PRESS DEVICE

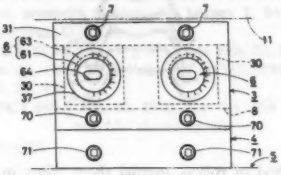
Seiju Nagakura, Ama, Japan, assignor to Toyokoki Co., Ltd., Jushiyama, Japan

Filed Apr. 21, 1983, Ser. No. 487,370

Claims priority, application Japan, Apr. 30, 1982, 57-73577

Int. Cl.³ B21D *37/00*

U.S. Cl. 72—482 **7 Claims**



1. A press comprising a table for receiving a lower mold, a movable ram movable up-and-down relative to said table, said ram being provided with a holder for supporting said upper mold, said holder utilizing an adapter mounted in alignment on a lower edge of said ram, said adapter being provided with an eccentric shaft member which is operable to adjust the vertical position of said holder relative to said ram by rotating said eccentric shaft member, said adapter comprising a front plate and a rear plate, said front plate being spaced from said rear plate, a middle plate disposed between said front and rear plates, said eccentric shaft member having two end sections and a center section, said center section being eccentrically disposed relative to said two end sections, said two end sections being rotatably received in said front plate and said rear plate, said middle plate having an opening in which said center section is received such that rotation of said eccentric shaft member raises and lowers said middle plate relative to said front and rear plates.

4,498,329

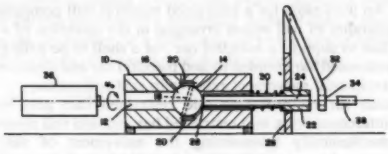
APPARATUS FOR MEASUREMENT OF SLIDING FRICTION USING GYROSCOPIC MASS

James W. Bloomer, II, Bremerton, Wash., and Robert H. Nunn, Plymouth, England, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 20, 1983, Ser. No. 496,699

Int. Cl.³ G01N *19/02*

U.S. Cl. 73—9 **10 Claims**



7. A method for determining the coefficient of sliding friction between two bodies comprising the steps of:

(a) configuring the first of said bodies as a cylinder, said

cylinder having an internal bore along its longitudinal axis and capable of being rotated at selected speeds about said axis, said cylinder further fabricated in two pieces such that said cylinder has a central cavity approximate the middle of said axis;

(b) configuring the second of said bodies as a sphere having a major axis of inertia and two equal minor axis of inertia, the diameter of said sphere being slightly less than any dimension of said cavity;

(c) placing at least two tubular inserts in fixed positions in said cavity such that said inserts touch the surface of said sphere;

(d) aligning said major axis of said sphere at a predetermined angle away from said axis of said cylinder;

(e) holding said sphere at said predetermined angle while said cylinder and said sphere within said cavity are spun to a predetermined rate of rotation;

(f) releasing said sphere in said cavity such that said sphere will gyroscopically align said major axis of inertia with said axis of said cylinder; and

(g) determining the time required for said major axis of inertia of said sphere to traverse said predetermined angle and align with said cylindrical axis.

4,498,330

GAS DETECTING AND MONITORING DEVICE

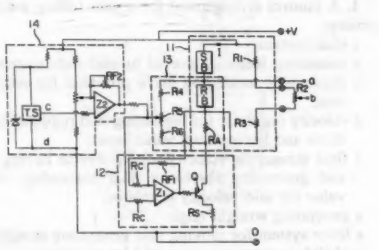
Toshiro Hosoya, Tokyo, Japan, assignor to U.S. Industrial Products Co., Norwalk, Calif.

Filed May 10, 1982, Ser. No. 376,519

Claims priority, application Japan, May 15, 1981, 56-72918

Int. Cl.³ G01N *27/12*

U.S. Cl. 73—23 **8 Claims**



1. A gas detecting and monitoring device having a bridge circuit including a gas detecting element and a constant-current circuit for feeding a constant current to said gas detecting element, characterized in that said bridge circuit comprises a compensating bridge circuit including at least a part of said gas detecting element, said compensating bridge circuit producing a signal corresponding to the variation of the resistance value of said gas detecting element depending upon the variation of the ambient temperature and feeding said signal to said constant-current circuit to automatically control the current fed to said bridge circuit thereby maintaining the resistance value of said gas detecting element at a constant value, and a correcting circuit including a temperature sensor for sensing the variation of the ambient temperature disposed near said gas detecting element, said correcting circuit feeding the output of said temperature sensor corresponding to the variation of the ambient temperature to said compensating bridge circuit thereby compensating for the variation of the respective circuit components owing to the variation of the ambient temperature.

4,498,331

KNOCKING DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINES

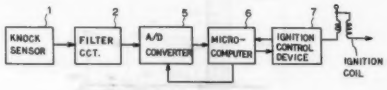
Hirotoshi Nakamura; Teruyoshi Itoh; Hiroshi Haraguchi, all of Kariya; Kou Narita; Toshiharu Iwata, both of Aichi, and Takeshi Matsui, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 7, 1983, Ser. No. 483,016

Claims priority, application Japan, Apr. 8, 1982, 57-59424

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—35 **6 Claims**



1. A knocking detecting apparatus for an internal combustion engine comprising:

a knocking sensor for detecting the existence of a knocking detecting signal having a frequency specific to knocking;

an A/D converter for converting the knocking detecting signal into digital values after a predetermined delay time from the instant when the knocking detecting signal passes through a predetermined level; and

a microcomputer which instructs the A/D converter about an instant of initiating the A/D conversion of the knocking detecting signal, and discriminates the occurrence of knocking from the digital values thus converted.

4,498,332

TEST DEVICE FOR MEASURING THE FIT OF HEARING AID RELATED DEVICES

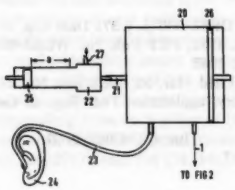
Henning Bruckhoff, Lister Meile 23, 3000 Hannover 1, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich and Henning Bruckhoff, Hannover, both of, Fed. Rep. of Germany

Filed Oct. 18, 1983, Ser. No. 543,183

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3239227

Int. Cl.³ G01M *3/00*; A61F *1/18*

U.S. Cl. 73—40 **8 Claims**



1. In a measuring device for checking the tightness of an ear impression mold which serves as a pattern for the manufacture of an otoplastic and of an otoplastic which is insertable in the auditory passage of an ear wherein by means of said device an air pressure prevailing on the outside can be produced, via an air permeable connection, in an inner space defined by the ear drum and the ear impression mold and otoplastic and through which changes in a generated deviating air pressure can be measured, the improvement comprising:

(a) a pump connected to said air permeable connection which serves for the generation of said deviating air pressure via a pressure chamber with a volume which is a multiple of the volume of said inner ear space; and

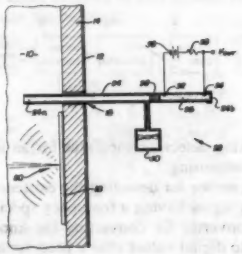
(b) a control circuit for presetting the timing of pumping and measuring functions provided therethrough.

4,498,333

CARBON GRANULE PROBE MICROPHONE FOR LEAK DETECTION

Shakkottai P. Parthasarathy, Duarte, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 1, 1983, Ser. No. 500,044
Int. Cl.³ G01M 3/24
U.S. Cl. 73—40.5 A 5 Claims



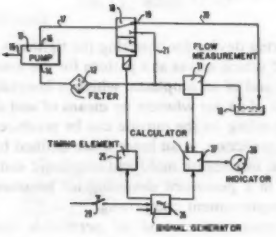
1. A fluid container system including means for detecting leaks therein, comprising:
a fluid container;
a ceramic tube having an open end adapted for insertion into the interior of the container, said tube having a closed end located on the outside of the container;
a plurality of carbon granules packed within the closed end of the tube;
a plug contained within the tube for maintaining the carbon granules in their packed condition, said plug allowing the passage of sound waves therethrough; and
detection means for detecting resistance changes of a fixed length path through the carbon granules resulting from pressure changes on the carbon granules caused by sound waves entering the tube.

4,498,334

APPARATUS FOR MEASURING FUEL CONSUMPTION IN AN INTERNAL COMBUSTION ENGINE

Klaus-Otto Riesenberg, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE82/00075, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO83/00221, PCT Pub. Date Jan. 20, 1983
PCT Filed Mar. 31, 1982, Ser. No. 433,119
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127123
Int. Cl.³ G01F 9/00
U.S. Cl. 73—113 3 Claims



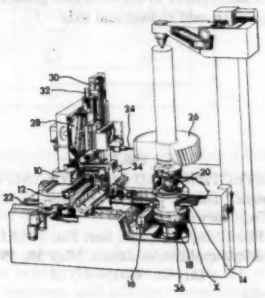
1. An apparatus for measuring fuel consumption in an internal combustion engine having fuel tank, a fuel pump which draws fuel from said fuel tank through an inflow line, a flow measuring device in said inflow line between said fuel tank and said fuel pump, a return flow line from said fuel pump to said fuel tank, control means for connecting said return flow line at least intermittently to the inflow line downstream of the flow measuring device and upstream of said fuel pump, means for controlling said control means in which said control means is activated only during a period of time in which said return flow line transmits fuel from said fuel pump to said inflow line downstream of said flow measuring device, and an evaluation circuit for producing a quantity signal only within a period of time in which said control means is operated to return fuel from said return line to said inflow line downstream of said flow measuring device.

4,498,335

CONTROL ARRANGEMENT FOR A GEAR TESTING MACHINE

Peter Thoma, Zurich, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed Oct. 25, 1982, Ser. No. 436,519
Claims priority, application Switzerland, Nov. 9, 1981, 7162/81
Int. Cl.³ G01B 7/28; G01M 13/02
U.S. Cl. 73—162 5 Claims



1. A control arrangement for a gear testing machine, comprising:
a slide system;
a measuring feeler supported by said slide system;
a regulatable measuring drive provided for such slide system;
a velocity regulator for regulating said regulatable mesuring drive and having a set value input;
a final measuring velocity-setting device having an output and generating thereat a final measuring velocity set value for said velocity regulator;
a generating straight edge;
a lever system for moving said generating straight edge;
said slide system actuating said lever system;
a generating cylinder rolling essentially free of slippage upon such generating straight edge when said generating straight edge is moved under the action of said lever system actuated by said slide system;
said generating cylinder being capable of being coupled with a test gear;
an auxiliary drive provided for said generating cylinder;
said auxiliary drive being settable to a substantially constant rotational moment;
a rotational moment-setting device provided for said auxiliary drive and generating a set signal representative of said substantially constant rotational moment for said auxiliary drive;
a vibration pickup fixedly connected with the gear testing machine and delivering a vibration signal which defines an envelope having an amplitude;
said vibration pickup having an output;
a start-up control device;
said start-up control device having a first input connected to said output of said final measuring velocity-setting device and receiving at said first input thereof said final measuring velocity set value;

said start-up control device having a second input connected to said rotational moment-setting device for said auxiliary drive and receiving at said second input thereof said set signal representative of said substantially constant rotational moment for said auxiliary drive;

said start-up control device having a third input connected to said output of said vibration pickup and receiving at said third input thereof said vibration signal delivered by said vibration pickup; and

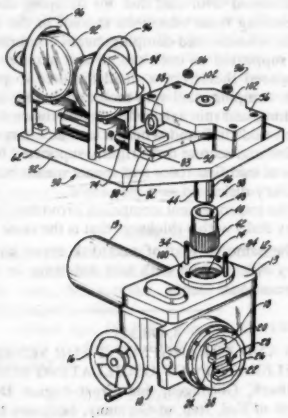
said start-up control device having an output connected to said set-value input of said velocity regulator for regulating said regulatable measuring drive for said slide system and generating at said output thereof, during a start-up phase of a gear testing operation, a set value of said measuring velocity which set value ascends as a function of time to said final measuring velocity set value according to a slope which equals the product of the reciprocal value of said set signal representative of said substantially constant rotational moment for said auxiliary drive and the reciprocal value of the amplitude of the envelope of said vibration signal.

4,498,336

TORQUE MEASURING DEVICE

Thomas B. Dalton, Muskegon, Mich., assignor to Dyna-Torque, Inc., Southfield, Mich.

Filed Jan. 14, 1983, Ser. No. 458,056
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—168 **8 Claims**



1. For use in conjunction with a valve actuator having a housing, an actuator member movable between an open and a closed position, means for moving said actuator member between said open and closed positions, a device for measuring the force applied by said moving means to said actuator member comprising:

a mounting plate;

means for detachably securing said mounting plate to said housing,

a coupler carried by said plate,

means for detachably securing said coupler to said actuator member so that said coupler and said actuator member move in unison with each other,

a force responsive means carried by said plate, said force responsive means having an input member wherein said force responsive means comprises a cylinder having a closed chamber, a piston slideably mounted within said cylinder and dividing said cylinder chamber into two subchambers,

means for indicating the magnitude of force imposed on said input member,

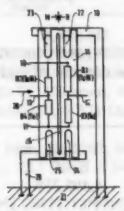
means for connecting said coupler to said input member.

4,498,337

TEMPERATURE SENSOR FOR DETERMINING MASS TRANSFER RATE AND/OR TEMPERATURE RATE OF A FLOWING MEDIUM

Heiko Gruner, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,270
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208096
Int. Cl.³ G01F *1/68*; G01K *7/16*
U.S. Cl. 73—204 **18 Claims**



1. Sensor apparatus for measuring temperature or for thermally measuring rate of flow, in a flowing medium, comprising:

means for supporting a metal foil in a flowing medium in a position in which said medium may flow along the surface of said foil in contact with at least one surface thereof;

a metal foil held in said support means for exposing the surfaces of said foil for heat exchange with said medium, said foil having a stiffness sufficient for providing mechanical stability during exposure to flow of said medium at least up to a predetermined rate of flow thereof;

an electrically insulating layer on said at least one surface of said foil;

a plurality of resistors respectively constituted as patches of thin electrically resistant layers on said insulating layer, said resistors including at least one pair of resistors having a single common connection and also including two resistors having resistances which vary with temperature, one of which is connected in a circuit for heating said last-mentioned resistor to a regulated extent;

connection means on said insulating layer for connecting the respective terminals of said resistors to connection conductors leading to an external measuring circuit;

said resistors and connection means substantially covering said at least one surface of said foil, and said foil and said supporting means being of a configuration providing for thermal decoupling from each other of said two resistors of resistance that varies with temperature, by virtue of a subdivision (**26**, **27**) of said foil (**14**, **14*a***).

4,498,338

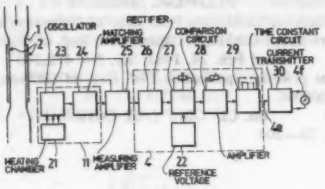
PROCEDURE AND MEANS FOR MEASURING THE COAL CONTENT IN QUICK ASH

Eero Peltonen, Espoo; Aarni Somerikko, Helsinki, and Timo Viitanen, Espoo, all of Finland, assignors to Kajaani Oy, Finland

Filed Jan. 26, 1983, Ser. No. 461,033
Claims priority, application Finland, Feb. 1, 1982, 820307
Int. Cl.³ G01N *27/22*
U.S. Cl. 73—432 R **14 Claims**

1. A method for measuring the coal content of quick ash, comprising the steps of feeding quick ash containing uncom-

busted coal particles into an electric field established by a pair of spaced electrodes of a capacitor, measuring the change in



capacitance of the capacitor, and generating a measuring signal which indicates the coal content of said ash.

4,498,339

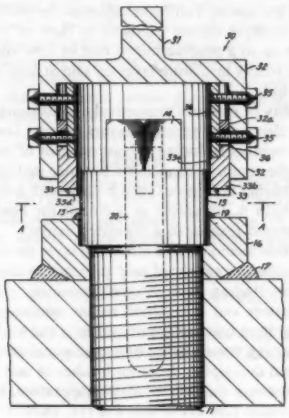
METHOD FOR INSPECTING INTERIOR OF A PRESSURE VESSEL HAVING REPLACEABLE PLUG ASSEMBLY

Joseph P. Diggins, Coraopolis, Pa., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Division of Ser. No. 398,487, Jul. 15, 1982,. This application Nov. 3, 1983, Ser. No. 548,384

Int. Cl.³ G01M *19/00, 11/00*

U.S. Cl. 73—432 R **6 Claims**



1. A method for visually inspecting the interior of a pressure vessel through a hole containing a replaceable plug, comprising:

(a) removing a seal weld from around a cylindrical shoulder of a threaded plug and an adjacent threaded reinforcing collar in the pressure vessel by positioning a cup-shaped rotary machining tool having at least one cutting edge concentrically disposed over said plug, guiding said tool by the cylindrical shoulder surface of the plug and rotating the tool to cut away the weld;

(b) unscrewing and removing said threaded plug from said threaded reinforcing collar in the vessel wall;

(c) viewing the interior of said vessel and then replacing the threaded plug; and

(d) remaking the seal weld between the threaded plug cylindrical shoulder and said adjacent reinforcing collar.

4,498,340

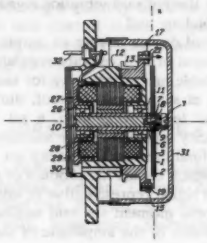
DAMPING MECHANISM FOR GYROSCOPES

Damon H. Duncan, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Apr. 7, 1983, Ser. No. 483,078

Int. Cl.³ G01C *19/06, 19/42*

U.S. Cl. 73—504 **3 Claims**



1. In a gyroscopic angular rate sensor of the type having a closed housing containing a compressible fluid and a thin flexible disk rotor therein, a spin motor coupled with said disk for spinning the same about a spin axis normal to the plane of said disk whereby upon rotation of said housing about axes orthogonal to said spin axis said disk deflects out of its plane of rotation due to precessional forces acting thereon, pick-off means fixed to said housing for supplying output signals proportional to such rotor deflection, and squeeze film fluid damping means coupled with said disk for damping deflections of said disk resulting from vibrations thereof in the direction of said spin axis; wherein said damping means comprises auxiliary disk means supported on each side of and parallel to said disk rotor and spaced therefrom a small distance to provide said squeeze film damping, said spin motor including a rigid shaft extending along said spin axis, wherein said disk rotor is rigidly supported on said shaft and wherein said auxiliary disk means comprises first and second disks rigidly supported on said shaft on each side of said first rotor and spacer means between each of said auxiliary disks and said disk rotor,

wherein the improvement comprises providing each of said auxiliary disks with a thickness that is the same or substantially the same as that of said disk rotor whereby said auxiliary disks deflect with said disk rotor in response to said precessional forces.

4,498,341

METHOD AND ARRANGEMENT FOR SENSING THE ACCELERATION OF OSCILLATING BODIES

Elmar Breitbach, Göttingen, and Ernst-August Dehne, Adelebsen, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- u. Versuchsanstalt für Luft-u-Raumfahrt e.V., Porz-Wahn, Fed. Rep. of Germany

Continuation of Ser. No. 198,856, Oct. 20, 1980, abandoned, which is a continuation of Ser. No. 55,080, Jul. 5, 1979, abandoned. This application Sep. 28, 1982, Ser. No. 425,577

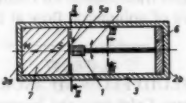
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1978, 2829425

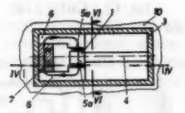
Int. Cl.³ G01P *15/08*

U.S. Cl. 73—517 R **5 Claims**

5. In a device for measuring accelerations on vibrating bodies, in which the relative motion between a resiliently suspended seismic mass, made of a ferromagnetic material, and the associated housing, which is connected to the vibrating body is converted into an electric measurement voltage, by means of at least two ohmic resistance means which are dependent on a magnetic field, and by means of a magnetic field in an air gap between the seismic mass and the housing, said magnetic field being generated by means of at least one pemanent magnet and being constant in its intensity and configuration, said resistance means being prestressed by the stationary magnetic field which permeates them and being arranged symmetrically with respect to the zero position of the seismic mass in

such a manner that, when relative motion occurs and the magnetic flux through one resistance means is reduced, the magnetic flux through the other resistance means is increased, the improvement wherein said resistance means is arranged perpendicularly to the lines of flux of the magnetic field in the air gap, with their longitudinal axes perpendicular to the direction of motion of the seismic mass and in that the size and the arrangement of the seismic mass is matched to the dimensions and the arrangement of said resistance means in such a manner





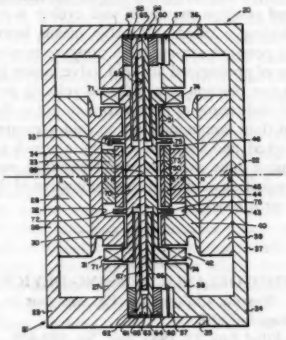
that, even when the relative motion occurs, the projection of the seismic mass onto the resistance means moves within the areas onto which these resistance means are attached, resulting in a reduction in the magnetic flux passing through one resistance means equal in magnitude to the increase in the magnetic flux passing through the other resistance means, wherein the magnetic field is focused onto said resistance means by means of soft iron parts so as to increase the prestressing by means of the stationary magnetic field and wherein said seismic mass consists of a soft iron part which is arranged so as to permit vibration, between the other soft iron parts and in the two resistance means are located, in each case, in two air gaps.

4,498,342

INTEGRATED SILICON ACCELEROMETER WITH STRESS-FREE REBALANCING

Vernon H. Aske, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 18, 1983, Ser. No. 486,144
Int. Cl.³ G01P *15/13*
U.S. Cl. 73—517 B **2 Claims**



2. In an accelerometer, in combination:

a flexure member comprising an epitaxially grown sheet of single crystal silicon including a central disc separated from an outer ring except at a pair of hinge sites spaced around the circumference of the disc by less than 180 degrees so that the disc is unbalanced about a line passing through the hinge sites, at least one of the hinge sites being implanted on opposite surfaces with impurity boron to form strain sensitive pickoff means;

means mounting said flexure member for acceleration in a direction orthogonal to said disc;

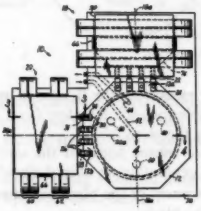
rebalance coil means secured to said inner plate, magnetic means carried by the mounting means for cooperation with said coil means, and large scale integrated circuitry on said disc including means energizable to give outputs in accordance with the responses of said strain sensitive means and means energizing said rebalance coil means in accordance with said outputs.

4,498,343

METHOD AND APPARATUS FOR TWO-AXIS SCREENING VIBRATION

David V. Kimball, 132 W. Chestnut, Monrovia, Calif. 91016

PCT No. PCT/US80/00350, § 371 Date May 4, 1982, § 102(e) Date May 4, 1982
PCT Filed Mar. 23, 1982, Ser. No. 375,891
Int. Cl.³ B06B *1/04, 3/00*
U.S. Cl. 73—663 **47 Claims**



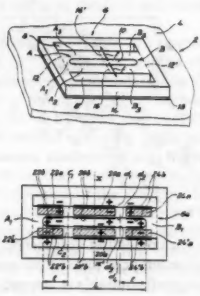
1. Vibration screening apparatus for the screening testing for manufacturing defects of a test piece carried on a rigid slip plate, said apparatus comprising angularly opposed first and second vibrating means each having bodily longitudinal displaceability in a first axis for driving the slip plate and lateral freedom in a second axis to permit longitudinal displacement of the other for driving the slip plate in two coplanar axes simultaneously, and separate means fixed to said slip plate in a manner constraining slip plate freedom of movement into said driving axes.

4,498,344

SENSITIVE ELEMENT FOR USE IN A STRAIN SENSOR AND A SENSOR COMPRISING SUCH AN ELEMENT

Rudolf Dinger, St. Aubin, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Jun. 30, 1983, Ser. No. 509,673
Claims priority, application France, Jul. 1, 1982, 82 11717
Int. Cl.³ G01L *1/10*
U.S. Cl. 73—778 **10 Claims**



1. A sensitive element for a strain sensor, comprising:

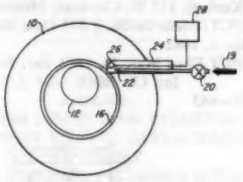
a support having a coefficient of thermal expansion α;
an elongated piezoelectric resonator provided with electrodes; and
means for securing the resonator to the support for transmitting to the resonator and lengthwise thereof strains applied to the support, the resonator having a cut such that its coefficient of thermal expansion longitudinally thereof is substantially equal to α.

4,498,345

METHOD FOR MEASURING SAW BLADE FLEXURE

Lawrence D. Dyer, Richardson, and Anderson D. McGregor, Sherman, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 4, 1982, Ser. No. 432,619
Int. Cl.³ G01M *5/00*; G01N *3/20*
U.S. Cl. 73—849 **1 Claim**



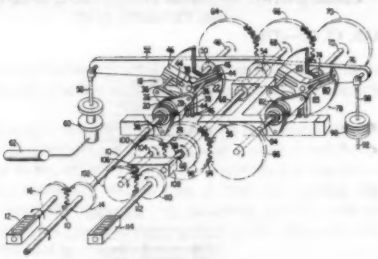
1. A method for measuring the flexure of an internal diameter saw blade suitable for slicing wafers from a semiconductor crystal, comprising the steps of:
positioning sensor means adjacent the cutting edge of the saw blade for generating an output signal proportional to the the displacement of the blade in a direction normal to the plane of the blade;
directing a stream of air at the saw blade adjacent the sensor, while the saw blade is rotating, to displace the blade from its steady state position;
measuring the deflection of the saw blade by measuring the change in the sensor output, wherein the flexure of the saw blade can be determined; and
periodically repeating said directing and measuring steps to determine whether the blade flexure falls within a predetermined limit.

4,498,346

METERED GAS VOLUME CORRECTING ARRANGEMENT

George W. Schneider, Jr, Huntingdon Valley, Pa., assignor to The Singer Company, Stamford, Conn.

Filed May 6, 1983, Ser. No. 492,293
Int. Cl.³ G01F *15/02*
U.S. Cl. 73—861.01 **12 Claims**



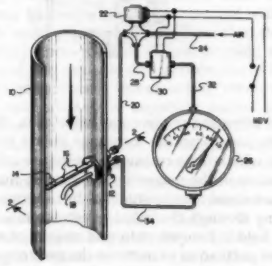
1. Mechanism for correcting volumetric flow indications of a gas meter to a base temperature and pressure, said mechanism including an input shaft rotatable at a speed which is a measure of the actual volumetric gas flow, a first variable ratio transmission which is rotatable by the input shaft, means for altering the ratio of the first transmission in response to temperature changes in the gas, gearing operable by the first transmission for rotating a shaft connected thereto at a speed indicative of volumetric flow at the base temperature, a second variable ratio transmission which is operably connected to said gearing for rotation thereby, means for altering the ratio of the second transmission and speed of a shaft rotatable thereby in response to pressure changes in the gas, a gear on the shaft rotatable by the second transmission, and a multiplying planetary gear train operably connected to the gear on the shaft rotatable by the second transmission and to the shaft drivable by the gearing operable by the first transmission for rotating an output shaft at a speed indicative of volumetric flow at the base temperature and pressure.

4,498,347

FLUID FLOW MEASURING

LeRoy F. Grantham, Calabasas, and Norman W. Heath, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 31, 1983, Ser. No. 481,012
Int. Cl.³ G01F *1/46*
U.S. Cl. 73—861.66 **5 Claims**



1. A device for ensuring the accuracy and reliability of gas flow measurements when said gas contains substantial quantities of entrained particulates, said measurement being taken from a pitot tube with a pressure-sensing means, said pitot tube being disposed in a duct through which said gas flows and having a velocity prressure-sensing tube with at least one orifice facing the upstream direction of flow for measuring velocity pressure, comprising rotation means for interposing a barrier between said orifice and the upstream direction of flow when velocity pressure measurements are not being taken, said rotation means comprising a remotely actuated, external cover rotatable between a first position in which it covers said orifice and a second position in which said orifice is exposed and further including a three-way valve means interconnecting said velocity pressure-sensing tube, pressure-measuring means and a source of pressurized air, said valve means being operable between one position in which said velocity pressure-sensing tube and said source of pressurized air are in fluid communication and fluid communication to said pressure-measuring means is blocked, and a second position in which said velocity pressure-sensing tube and pressure-measuring means are in fluid communication, and fluid communication to the source of pressurized air is blocked.

4,498,348

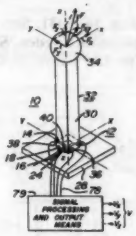
PHOTOELASTIC SENSING DEVICE

Laurence N. Wesson, Collegeville, Pa., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jun. 13, 1983, Ser. No. 503,429
Int. Cl.³ G01L *5/16*
U.S. Cl. 73—862.05 **51 Claims**

1. A photoelastic sensing device comprising a photoelastic member of transparent material, first means for providing light fluxes to the member for transmission therethrough as polarized light fluxes along respective first and second paths, second means for respectively receiving and detecting the light fluxes

transmitted along the first and second paths, the light fluxes respectively transmitted along the first and second paths of the member each being responsive to stresses in the member along its path, and third means for applying stresses to the member in response to the application thereto of force, which force is variable and has a magnitude and a direction represented by its



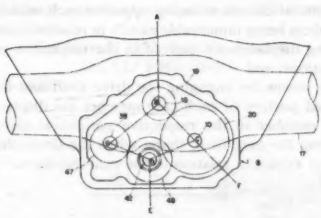
respective components along first and second vector coordinates defining a two dimensional space, the second means providing an output signal which is representative of the force and responsive to each of the components of the force applied to the third means.

4,498,349

FRONT POWER TAKE-OFF FOR TRACTORS

Tadao Nishihara, Matsuyama, Japan, assignor to Iseki & Co., Ltd., Matsuyama, Japan

Filed Sep. 13, 1982, Ser. No. 417,332
Int. Cl.³ F16H *37/00*; B60K *17/28, 25/00*
U.S. Cl. 74—5.2 **4 Claims**



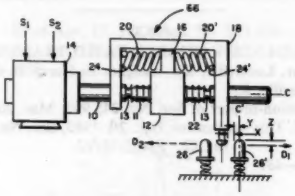
1. For use in a tractor type vehicle, an improved front power take off device comprising a transversely extending front axle housing (17), a front gear case (13), and an associated drive gear case (8), said front gear case being rotatably supported to said front axle housing (17), said front gear case (13) having a pivoted end (14) supported by said drive gear case (8), a differential mechanism (12) disposed in said front gear case (13) and having an associated drive pinion shaft (18) projecting from said pivoted end (14) into said drive gear case (8), a front wheel drive power input shaft (10) laterally disposed to one side of said drive pinion shaft (18), a front working power input shaft (38) laterally disposed to the other side of said drive pinion shaft (18), and a front working power output shaft (42) disposed between said front wheel drive power input shaft (10) and said front wheel working power input shaft, means (19, 20) for drivingly connecting said front wheel drive power input shaft (10) to said drive pinion shaft (18), and means (47, 48) for drivingly connecting said front working power input shaft (38) to said front working power output shaft (42), a transmission means, said transmission means including a front wheel power take-off shaft (6) co-axially disposed relative to said front wheel drive power input shaft, and a front working power take-off drive shaft (35) co-axially disposed relative to said front working power input shaft (38), a first transmission shaft means (11) co-axially interconnecting said front wheel drive power take-off shaft (6) to said front wheel drive power input shaft (10), and a second transmission shaft means (39) co-axially interconnecting said front working power take-off shaft (35) to said front working power input shaft (38) whereby said front wheel drive power input shaft (10) and said front wheel working power input shaft (38) are disposed below and parallel to either side of said drive pinion shaft (18), and said front wheel power output shaft (42) is disposed between shafts (10) and (38) so as to space said wheel power output shaft (42) as close as possible to said drive pinion shaft (18) so as to provide for maximum clearance between said drive gear case (8) and the ground.

4,498,350

SHIFTING MECHANISM

Alan R. Ross, Lyndhurst, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 20, 1982, Ser. No. 420,194
Int. Cl.³ F16H *27/02, 29/02*
U.S. Cl. 74—89.15 **14 Claims**



1. A shifting mechanism for positioning a means for performing at least one operation in a preloaded condition at each of at least first and second spaced-apart operating positions comprising:

a threaded shaft having a central longitudinal rotational axis between opposite ends thereof,

driving means operable to cause the shaft to rotate in either one direction or in an opposite direction about the central longitudinal rotational axis thereof,

a drive nut threadingly mounted on the shaft in such a manner as to move axially in one direction along the shaft when the shaft is rotated in the one direction and able to move axially along the shaft in an opposite direction when the shaft is rotated in the opposite direction,

a frame moveably disposed with respect to the shaft and the drive nut and able to move in a first direction to the first operating position in response to movement of the drive nut in the one direction and able to move in a second direction to the second operating position in response to movement of the drive nut in the opposite direction,

first resilient biasing means disposed intermediate the drive nut and a first component of the frame,

second resilient biasing means disposed intermediate the drive nut and a second component of the frame spaced apart from the first component of the frame,

operating means associated with the frame enabling the performance of the operation upon movement of the frame respectively to the first and second operating positions,

and means enabling the frame and operating means to stop respectively at the first and second operating positions, said means comprising an undercut in the shaft adapted to cause the drive nut to free-wheel without further advancement along the shaft when the operating means reaches the first and second operating positions respectively,

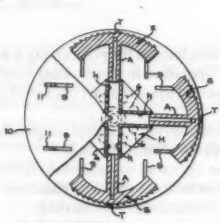
said driving means, shaft, drive nut, frame, operating means and first and second biasing means operably associated such that (1) rotation of the shaft by the driving means in the one direction causes the drive nut to move in the one direction axially along the shaft and cause the first biasing means to press against the first component of the frame and move the frame and the operating means associated therewith in the first direction to the first operating position and stop thereat and be compressed sufficiently by any resistance encountered to place the operating means in a preloaded condition sufficient to apply a biasing force

against the frame sufficient to enable the operating means to perform the operation by overcoming the resistance or upon removal of the resistance upon the occurrence of an event enabling the operation to occur and (2) rotation of the shaft by the driving means in the opposite direction causes the drive nut to move in the opposite direction axially along the shaft and cause the second biasing means to press against the second component of the frame and move the frame and the operating means associated therewith in the second direction to the second operating position and stop thereat and be compressed sufficiently by any resistance encountered to place the operating means in a preloaded condition sufficient to apply a biasing force against the frame sufficient to enable the operating means to perform the operation by overcoming the resistance or upon removal of the resistance upon the occurrence of an event enabling the operation to occur.

4,498,351
CONTINUOUSLY VARIABLE RATIO TRANSMISSION

Rooin Ahoor, Louisville, Ky., assignor to Harry B. O'Donnell, III, Louisville, Ky.

Continuation-in-part of Ser. No. 245,993, Mar. 20, 1981, abandoned. This application Dec. 20, 1983, Ser. No. 563,573
Int. Cl.³ F16H *55/12*
U.S. Cl. 74—439 **4 Claims**



1. For interconnecting a rotary output shaft of drive means to a rotary input shaft of means to be driven by said drive means, novel transmission means, comprising:

(a) gear means mounted on base means for rotary movement relative thereto, with said gear means comprising first, second, third and fourth gears and each of said gears including a hollow, fluid-receiving, radially inner hub portion that is rotatably mounted to said base means and a radially outer portion that is divided into plural segments each having a radially outer end provided with teeth and a radially inner end comprising an arm mounted within said hollow hub portion for slidable movement relative thereto both towards and away from radial center of said hub portion,

(b) said hub portion of said first gear being connectable to said output shaft, said hub portion of said fourth gear being connectable to said input shaft, and said hub portions of said second and third gears being interconnected to one another;

(c) first endless chain means engageable with said radially outer portions of said first and second gears to interconnect the same and second endless chain means engageable with said radially outer portions of said third and fourth gears to interconnect the same;

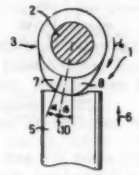
and

(d) means for selectively supplying and removing pressurized fluid to and from said hollow hub portions of said gears for selectively slidably moving said segments of said gears radially outwardly and inwardly with respect to their said hub portions to thus selectively vary the radius of each of said gears by thus moving said plural segments of each of said gears through several selectively variable radial positions as related to each of said gear hub portions.

4,498,352
CAM APPARATUS WITH A ROTATABLE, VARIABLE-PROFILE CAM MEANS

Lars G. B. Hedelin, Skärsnäsvägen 5, S-18263 Djursholm, Sweden

PCT No. PCT/SE81/00259, § 371 Date May 25, 1982, § 102(e) Date May 25, 1982, PCT Pub. No. WO82/01217, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 14, 1981, Ser. No. 385,393
Claims priority, application Sweden, Sep. 29, 1980, 8006793
Int. Cl.³ F16H *53/00*
U.S. Cl. 74—568 R **19 Claims**



1. A cam apparatus comprising:

a drive shaft;

a cam means on the drive shaft and having a cam flank for coacting with a movable follower for controlling the motion of the follower; the cam means comprising first and second cam members, each cam member having a sleeve-shaped portion with a hole for fitting around and receiving the drive shaft and being displaceable in a respective peripheral direction in relation to the drive shaft for varying the shape of the cam flank, the respective peripheral directions being opposite each other; the cam members being immovable axially in relation to each other during displacement thereof in the respective peripheral directions; and

a guide means for engaging the drive shaft and the sleeve-shaped portion of each cam member for displacing each cam member in the respective peripheral direction for varying the cam flank shape when the drive shaft is displaced axially in relation to the cam members.

4,498,353
AIR BREATHER STRUCTURE FOR OIL SEALS IN AN AUTOMATIC TRANSMISSION

Nobumitsu Kitade, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,651
Claims priority, application Japan, Sep. 30, 1981, 56-155564
Int. Cl.³ F16H *57/02, 57/04;* **B65D** *53/00;* **F16J** *15/00*
U.S. Cl. 74—606 R **7 Claims**

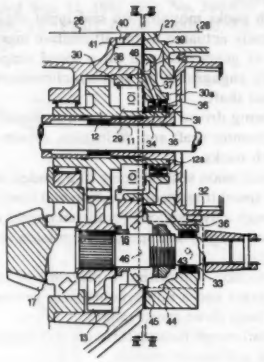
1. An improved air breather structure for oil seals in an automatic transmission for a vehicle wherein each oil seal comprises a pair of sealing members with a space therebetween, said automatic transmission comprises a final reduction device provided in a differential case and an automatic transmission device provided in an automatic transmission case, both the cases coupled at corresponding ends of the respective cases interposing a gasket therebetween, two rotating shafts extending across the gasket for transmitting an output of the automatic transmission to front and rear wheels of the vehicle for four-wheel driving, said oil seals being provided around the rotating shafts, respectively, the improvement comprising

each of said cases forming a plurality of cavities at said ends of the cases, respectively, reducing the weight of the cases,

a first passage provided in one of said cases communicating the space of the first oil seal with a recess formed adjacent the end of said first passage;

an opening formed in said gasket communicating with said recess;

a first means provided in a first of said cavities in an upper portion of the other of said cases for communicating said opening with the atmosphere;



a second passage provided in one of the cases for communicating the space of the second oil seal with a second of said cavities; and

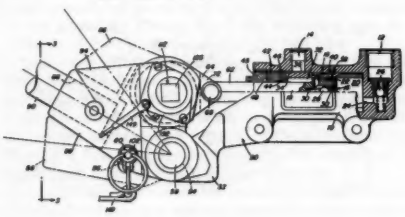
a second means including another of said cavities for communicating said second passage with said first means.

4,498,354

AUTOMATIC LOCK FOR TWO MODE PISTON PUMP

Wellington J. Walker, Kensington, Conn., and George M. Whitehouse, deceased, late of Wallingford, Conn. (by Barbara J. Whitehouse, executor), assignors to LFE Corporation, Waltham, Mass.

Filed Nov. 9, 1982, Ser. No. 440,268
Int. Cl.³ F04B *35/00*
U.S. Cl. 74—625 **5 Claims**



1. A lock assembly for a two mode piston pump comprising

a pump housing including a cylinder,

a piston mounted for reciprocal movement within said cylinder, and

a piston rod fixed to said piston and extending out of said pump housing for reciprocal movement to operate said piston,

wherein said assembly comprises:

a connecting link pivotally connected to said piston rod,

lever means pivotally mounted on said pump housing,

cam means, having a cylindrical outer surface, rotatably mounted in said connecting link for effecting reciprocal movement of said connecting link,

cam shaft means fixed, off-center, to said cam means and rotatably mounted within said lever means,

said cam shaft means having an axial passage with a square cross-section for engagement by a power tool square drive shaft,

a cam locking means for locking said cam shaft means to said lever means for operation of said pump by pivotal movement of said lever means with respect to said pump housing,

said cam locking means comprising a shaft portion adapted to be insertable in said cam shaft means axial passage, and a head portion fixed to said shaft portion,

said cam locking means shaft portion having a first position in said axial passage in which said cam shaft means is locked to said lever means and a second position in said axial passage in which said cam shaft means is unlocked, and

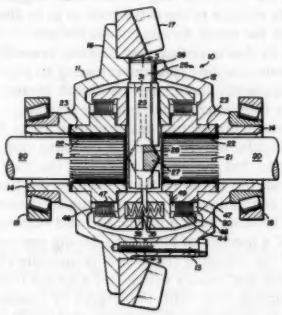
a lever locking means for locking said lever means to said pump housing.

4,498,355

SELF LOCKING DIFFERENTIAL

Carl E. Schou, 1438 Lone Pine Rd., Bloomfield Hills, Mich. 48013

Filed Apr. 22, 1982, Ser. No. 371,034
Int. Cl.³ F16H *35/04, 1/44*
U.S. Cl. 74—650 **3 Claims**



1. A differential assembly, self-releasing locking means for connecting and disconnecting the end portions of each of a pair of axially aligned, conventional axle-like shaft to a conventional power rotated housing which contains said end portions, comprising:

a pair of diametrically arranged, hexagonal cross-section, drive rods housed between the adjacent shaft end portions and having their outer ends fixedly connected to the housing for rotating therewith, each of said drive rods including outer ends having round cross-sections which are fitted into corresponding openings in the housing, and said drive rods including opposed notches at their centers for permitting an interlocked connection between said drive rods such that said drive rods lie in the same plane when they are connected at said notches;

a pair of closely spaced apart, opposing coupling rings in axial alignment with and surrounding bushing-like hubs mounted upon the shaft end portions;

pairs of aligned, adjacent V-shaped notches formed in the facing ends of the coupling rings with the drive rods radially extending through the V-shaped notches, and with the V-shaped notch forming walls being parallel to and slightly spaced from their adjacent hexagonal rod faces;

each of said hexagonal drive rods being positioned between said coupling rings and having opposed lead faces which are perpendicular to the plane of rotation of said drive rods;

a clutch means releasably interconnecting each of the coupling rings to the bushing-like hub which said ring surrounds, said clutch means being engaged by axially outwardly directed pressure caused by movement of the coupling ring away from the opposite coupling ring, and

said clutch means being disengaged upon release of the ring pressure due to movement of the ring inwardly towards the opposite coupling ring, and each of said clutch means including a series of interleaved ring-like clutch plates surrounding a shaft end hub, and being surrounded by a coupling ring, and with alternate plates being spline connected to the coupling ring and to the hub, with the interleaved clutch plates being relatively axially movable together into engaging surface to surface contact for locking and being movable apart from each other for unlocking in response to corresponding movement of their coupling ring;

whereby during normal powered rotation of the housing, the drive rods rotate with the housing and engage the V-shaped notch forming walls that are in their path of rotation for rotating the coupling rings and simultaneously, for wedging the V-shaped notch forming walls apart, causing the coupling rings to move axially apart and to apply axially outwardly directed pressure upon the clutch means to thereby lock the hubs and shaft end portions to the housing for rotation therewith; but when either of the shafts rotate faster than the rotation of the housing, the coupling ring of that shaft angularly moves forwardly relative to the drive rods so as to disengage the rods from the notch forming walls for that coupling ring resulting in that coupling ring moving inwardly towards the opposite coupling ring and releasing its pressure upon, and consequently unlocking, its clutch means so that its shaft may free wheel relative to the housing;

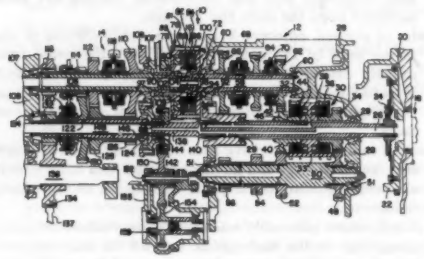
and stop means connecting the coupling rings for limited relative angular movement of one coupling ring relative to the other so that during the times that the rods are disengaged from the notch forming walls in the path of their direction of rotation, the rods are roughly centered within the walls forming such notches, and said stop means being formed of a number of pins, each having one end secured to one of the coupling rings, and its opposite end extending towards and loosely fitting into a socket formed in the other coupling ring, with the degree of looseness corresponding to the permissible angular movement of one ring relative to the other for centering the drive rods within the notches of one ring, and coil springs means arranged between and normally spring pressing the two coupling rings apart in the axial direction for normally tending to move the rings axially away from the rods and into position for applying pressure to their respective clutch means for engaging the clutch means.

4,498,356

MOTOR VEHICLE TRANSMISSION

George R. Vater, Clarendon Hills, and Harold W. Melles, Downers Grove, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed May 18, 1982, Ser. No. 379,549
Int. Cl.³ F16H *3/02, 3/08, 3/38*
U.S. Cl. 74—745 **11 Claims**



1. A motor vehicle transmission comprising:

a speed transmission section connected with the vehicle engine and comprising:

an engine driven input shaft means extending through said speed section;

drive clutch packs mounted on said input shaft means and hydraulically actuated in the alternative manner;

a plurality of gears mounted on a speed output shaft and selectively engageable by gear synchronizers secured to said output shaft;

said gears being driven by drive gears mounted on an intermediate counter shaft and, in its turn, driven by either of said clutch packs;

a range transmission section being in a tandem arrangement with said speed transmission section and coupleable therewith through a hydraulically actuated master clutch transmitting power from said speed transmission section to said range section;

said range section comprising a plurality of synchronized forward gears and a non-synchronizer reverse gear providing at least three speed ranges;

said input shaft means passing through said range section and by-passing said master clutch;

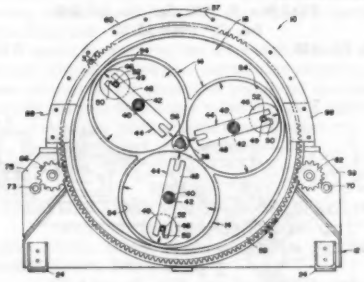
whereby during all synchronized shifting said master clutch and said clutch packs are disengaged, and re-engagement of said master clutch follows that of said clutch packs.

4,498,357

MASS ACCELERATOR AND POWER CONVERTER UNIT

George Makarov, 30205 Summit Dr., Apartment 201, Farmington Hills, Mich. 48018

Filed Sep. 22, 1982, Ser. No. 421,612
Int. Cl.³ F16H *3/74, 33/02, 1/28*
U.S. Cl. 74—752 F **20 Claims**



1. A mass accelerator and power converter unit comprising:

a support structure;

a plurality of cylindrical housings having curved inner surfaces;

a like plurality of masses, each of which is rotatably mounted in its respective cylindrical housing about its respective auxiliary rotational axis to engage the inner curved surface of its respective housing;

a wheel rotatably mounted on said support structure for rotating about a main rotational axis spaced apart from each of said plurality of auxiliary axes, said wheel interconnecting said cylindrical housings to permit said housings to rotate about said main axis in unison upon rotation of said masses;

drive means coupled to each of said masses for supplying rotational power to each of said masses; and

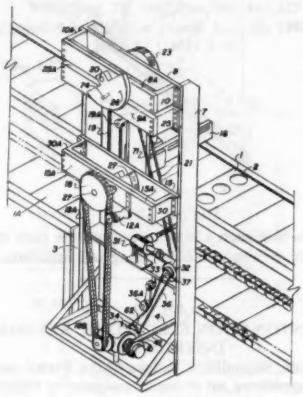
driven means coupled to said wheel for withdrawing rotational power from said wheel, said wheel rotating upon engagement of said rotating masses with their respective housings.

4,498,358

OSCILLATING HEAD FILLER DEVICE

Glen F. Raque, and Edward A. Robinson, both of Louisville, Ky., assignors to Raque Food Systems Inc., Louisville, Ky.

Filed Sep. 22, 1981, Ser. No. 304,619
Int. Cl.³ F16H *35/08*; B65B *43/42*
U.S. Cl. 74—829 **7 Claims**



1. A device for adjusting the spacing between a mounting arm and a conveyor traveling linearly parallel to a first axis at a selected speed where the mounting arm moves in an orbital path in a plane parallel to the first axis and about a second axis transverse to the first axis in spaced relation from the conveyor so the linear component of speed of the mounting arm parallel to the direction of travel of the conveyor is directed opposite to the direction of travel during a first portion of the orbit and in the same direction of travel as the conveyor during a second portion of the orbit including:

a. crank drive means having a drive shaft to rotate eccentric crank means and an eccentrically located post connected to the mounting arm to drive the mounting arm in an orbital path in a plane parallel to the first axis;

b. a planetary differential gear device having a first input shaft and an adjustment input shaft and a differential output shaft which rotates through an arc instantaneously responsive to the rotation of the first input shaft and to be selectively advanced by rotation of the adjustment input shaft in a first direction and retarded by rotation of the adjustment input shaft in a second direction;

c. first adjustment drive means including a shaft rotatable about a fixed axis at a selected speed of rotation and having a first circular external drive surface;

d. power transmission means to interconnect the differential output shaft for rotation of the first adjustment drive means;

e. second adjustment drive means carried by the mounting arm means for orbital travel therewith having a second circular external drive surface to engage and be in continuous contact with said first external drive surface and where the second adjustment drive means has a rotatable output shaft;

f. first drive means to drive the conveyor;

g. second drive means to rotate the drive shaft of the crank drive means and the first input shaft of the planetary differential gear device so that without rotation of the adjustment input shaft the arc of rotation of the first circular external drive surface is equal to the arc of rotation of the second circular external drive surface so there is no relative movement of the second adjustment drive means about the first adjustment drive means and so that upon rotation of the adjustment input shaft of the planetary differential gear device the first circular external drive surface rotates relative to the second circular external drive surface to rotate the rotatable output shaft through an arc proportional to the extent of rotation of the adjustment input shaft and in a direction determined by the direction of rotation of the adjustment input shaft;

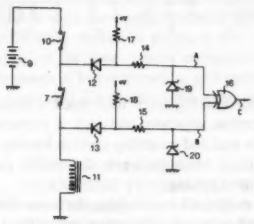
h. space adjusting means connected to said mounting arm and having a space adjusting input shaft driven by the rotatable output shaft to adjust the position of a portion of the mounting arm relative to the conveyor dependant upon extent and direction of rotation of the rotatable output shaft of the second adjustment drive means.

4,498,359

SYSTEM FOR DETECTING RANGES IN AN AUTOMATIC TRANSMISSION FOR VEHICLES

Kazuo Hara, Musashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,711
Claims priority, application Japan, Nov. 27, 1980, 55-167112
Int. Cl.³ B60K *41/00*; G01D *11/00*; F02N *17/00*; H01H *9/06*
U.S. Cl. 74—850 **3 Claims**



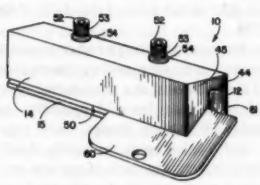
3. A system for detecting a neutral range state of an automatic transmission for an engine powered vehicle having a select lever for changing ranges of said automatic transmission, comprising a battery, a starter switch, an inhibitor switch, and a starter which are connected in series, said inhibitor switch being turned on when said select lever of said automatic transmission is in a neutral position; and a circuit means responsive to voltages at both ends of said inhibitor switch for producing an output when said inhibitor switch is closed, said circuit means comprising a pair of diodes connected to said both ends of said inhibitor switch at a cathode of each of said diodes, respectively, a voltage supply for applying a voltage to an anode of each said diode, and means comprising a logic gate connected to said anode of each said diode so as to detect the neutral range state.

4,498,360

SHARPENER FOR A SPREADING TOOL

J. David Milum, Rte. 5, Cumming, Ga. 30130

Filed Sep. 14, 1983, Ser. No. 532,194
Int. Cl.³ B21K *5/12*
U.S. Cl. 76—88 **8 Claims**



1. An apparatus for sharpening an edge of a sheet-like member, comprising:

a guide surface abutting a barrier;

means for mounting a blade extending through said barrier, said blade including a cutting edge intersecting said guide surface; and

guide means mounted in predetermined spaced-apart relation to said guide surface for urging the sheet-like member against said guide surface;

said sheet-like member being insertable between said guide surface and said guide means to contact said barrier and said cutting edge of said blade associated therewith.

4,498,361

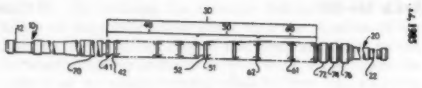
BROACH MANUFACTURING METHOD

Wallace C. Grace, LaSalle, Canada, assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Apr. 25, 1983, Ser. No. 488,233

Int. Cl.³ B21K *5/02*

U.S. Cl. 76—101 R **6 Claims**



1. A method for making from tool stock a broaching tool with a puller portion adjacent one end, a retriever portion adjacent the other end and a cutting portion having a plurality of individual cutting teeth between the puller portion and retriever portion comprising

(a) turning the tool stock to machine the outer dimension of the puller portion, retriever portion and cutting portion to a preselected over-size dimension larger than the finished outer dimension of the tool and turning individual cutting teeth to have a gullet radius to finished dimension and a hook angle to an oversize dimension intersecting the gullet radius,

(b) then heat treating the tool stock turned in step (a),

(c) then turning the heat treated tool stock to machine the oversize outer dimension of the puller portion, retriever portion and at least a portion of the cutting portion of the tool stock to finished dimension and turning individual cutting teeth to face the hook angle to finished dimension and blend said hook angle with the gullet radius.

4,498,362

APPARATUS FOR CUTTING THROUGH ROD OR STRAND-LIKE PRODUCTS

Hermann O. Steinke; Roland Steinke, and Karl-Ulrich Vornfett, all of Hamburg, Fed. Rep. of Germany, assignors to Justus Technik GmbH Industrie-Anlagen, Hamburg, Fed. Rep. of Germany

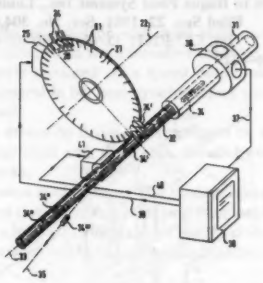
Filed Aug. 23, 1983, Ser. No. 525,820

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1982, 3231825

Int. Cl.³ B26D *1/29, 3/16, 5/02, 7/06*

U.S. Cl. 83—304 **16 Claims**

1. Apparatus for cutting through rod or strand-like products, comprising means for moving said products individually in a predetermined direction and at a predetermined speed thereby defining a path of motion for said products, said apparatus having a plurality of cutting blades, each provided with a cutting edge, said blades being pivotally fixed to a rotary holder arranged adjacent the path of motion and whose rotation axis is inclined relative to the longitudinal extension of the path of motion so that said cutting edges pass through the products at right angles to the longitudinal extension of the path of motion during the cutting process, wherein said cutting blades are movable between a working position, in which the cutting edges pass through the products, and an inoperative



position, in which such a blade is outside the path of motion and means for driving and controlling said apparatus.

4,498,363

JUST INTONATION ELECTRONIC KEYBOARD INSTRUMENT

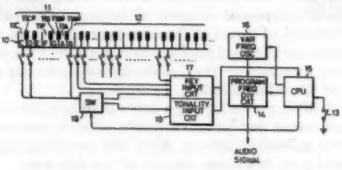
Kengo Shimada, Sagamihara; Yutaka Chiba, Fuchu, and Toshio Sanuki, Sagamihara, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Feb. 14, 1983, Ser. No. 466,364

Claims priority, application Japan, Feb. 13, 1982, 57-21851; Feb. 13, 1982, 57-21853

Int. Cl.³ G09B *15/02;* G10H *1/18*

U.S. Cl. 84—1.01 **14 Claims**



1. A just intonation electronic keyboard instrument comprising:

a plurality of tonality selection switches for selecting each key from among twenty-four different just intonation keys, number of said tonality selection switches being less than twenty-four;

control means for discriminating selection of a major scale or a minor scale, discriminating one or a plurality of keys among each of twelve keys from C through B, and determining one or a plurality of keys from among said twenty-four just intonation keys, according to manipulation of said plurality of tonality selection switches;

variable frequency oscillator means responsive to the determined one or plurality of keys among said twenty-four just intonation keys, for generating an output oscillation frequency so that the output oscillation frequency is equal to a frequency which is an integral multiple of a frequency of a key-note of the key determined by said control means; and

frequency dividing means comprising a plurality of frequency dividers respectively provided in correspondence with each of instrument keys of a keyboard for play,

each of said plurality of frequency dividers being supplied with the output of said variable frequency oscillator means,

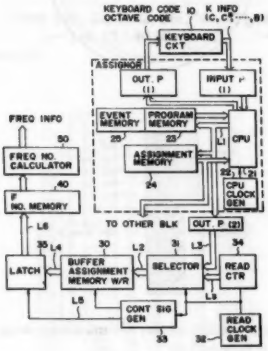
each of frequency dividing ratios of said frequency dividers being varied so that ratios among the frequency dividing

ratios are in accordance with a temperament of just intonation key determined by said control means.

4,498,364
ELECTRONIC MUSICAL INSTRUMENT

Sadaaki Ezawa, Iwata, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Aug. 25, 1982, Ser. No. 411,337
Claims priority, application Japan, Aug. 28, 1981, 56-134906
Int. Cl.³ G10H *3/06*
U.S. Cl. 84—1.17 **1 Claim**



1. An electronic musical instrument including a plurality of keyboards in which a pair of frequency numbers consisting of a note frequency number corresponding to a pitch of a predetermined note and an auxiliary frequency number of a value slightly different from the value of the note frequency number are provided for each predetermined note and the frequency numbers are selected in accordance with predetermined key information, the electronic musical instrument comprising:

means for selecting the note frequency number for keys which are depressed on a plurality of keyboards when keys corresponding only to different notes are depressed on the plurality of keyboards;

means for detecting the keys simultaneously depressed on at least two keyboards are of the same note;

means for selecting the note frequency number for the one of the depressed keys;

means for selecting the auxiliary frequency number for the other depressed key in response to said means for detecting having detected simultaneously depressed keys of the same note on at least two keyboards; and

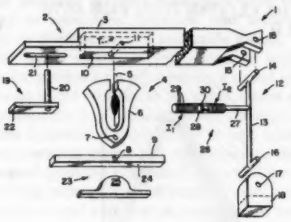
means for reading out a musical waveform memory in accordance with the selected frequency numbers to generate musical waveform signals of slightly different pitches when the auxiliary frequency member is selected.

4,498,365
APPARATUS FOR PROVIDING EXTENDED VERSATILITY IN A KEYBOARD-CONTROLLED MUSICAL INSTRUMENT IN PITCH VARIATION, TONE ALTERATION CHARACTERISTICS AND THE LIKE

Jeff Tripp, 35 Squam Rd., Rockport, Mass. 01966; John Allen, 10 Farragut St., Somerville, Mass. 02144, and F. Merrick Murphy, 40 Rugg Rd., Allston, Mass. 02134

Filed Oct. 14, 1983, Ser. No. 541,915
Int. Cl.³ G10H *1/02, 1/34*
U.S. Cl. 84—1.24 **13 Claims**

1. A keyboard-operated tone-producing apparatus having, in combination, keyboard means the keys of which are mounted for downward depression to effect tone production in the apparatus and for longitudinal sliding to alter or bend the tone; electronic digital signal processor means; tone-generating means; pressure sensing means responsive to key depression to produce signals corresponding thereto for application to the signal processor means to produce corresponding digital signals applied to generate tones from the tone-generating means; means for causing the pressure sensing means to provide the same signal reference, upon key depression, irrespective of the

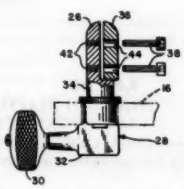


point of pressure along the path of longitudinal sliding of the key; and means controlled in response to the last-named means and cooperative with the signal processor means as it controls the tone-generating means to produce one or all of variable range bending of the tone, center compensation for differing player techniques of key depression, and second striking of the key while depressed for second tone generation.

4,498,366
CLAMPING TUNING MACHINE

Stephen P. Carr, 67 Singing Wood Dr., Holbrook, N.Y. 11741

Filed Mar. 29, 1984, Ser. No. 594,845
Int. Cl.³ G10D *3/14*
U.S. Cl. 84—304 **6 Claims**



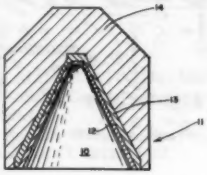
1. A tuning machine for a stringed musical instrument comprising post means for terminating a string, a tuning key, and means for transmitting rotational force of said tuning key to cause rotation of said post means with sufficient mechanical advantage to effectively render said transmitting means irreversible, said rotation of said post means caused by rotation of said key permitting selective adjustment of the tension in said string, the improvement comprising wherein said post means comprises a main body and a removable clamping segment, said main body and segment having matching mating surfaces to clamp said string over an extended length of said string thereby minimizing damage to said string, and means for actuating said segment on said main body to permit clamping of the end of said string with sufficient force so as to permit termination and tension adjustment of said string by said tuning key with less than 360 degree wraparound of said string on said post means, said actuating means including threaded means for adjustably clamping said segment to said main body, a pair of spaced holes in said segment, a pair of spaced threaded holes in said main body aligned with said spaced holes, and threaded bolts to pass through said spaced holes and threaded into said threaded holes to permit tightening of said segment to said main body for clamping the string passing therethrough.

4,498,367

ENERGY TRANSFER THROUGH A MULTI-LAYER LINER FOR SHAPED CHARGES

Saul Skolnick, and Albert Goodman, both of Albuquerque, N. Mex., assignors to Southwest Energy Group, Ltd., Albuquerque, N. Mex.

Filed Sep. 30, 1982, Ser. No. 429,247
Int. Cl.³ C06B *21/00*; F42B *33/10*
U.S. Cl. 86—1 R **6 Claims**



1. Method for determining liner materials to enhance the formation of high energy jets in multilayer shaped charges, comprising the steps of:

employing a high density material for an inner layer of a shaped charge said high density materials including tungston, uranium, tantalium, gold, lead and alloys thereof; and

employing a lower density material for an outer layer and suitably adjusting the properties of said lower density material selected from copper, aluminum, antimony, magnesium and alloys thereof, to buffer said inner layer from shattering as a result of the detonation of a high explosive charge adjacent to said outer layer.

4,498,368

FRANGIBLE FLY THROUGH DIAPHRAGM FOR MISSILE LAUNCH CANISTER

William J. Doane, San Diego, Calif., assignor to The United States of America as representedby the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1983, Ser. No. 539,503
Int. Cl.³ F41F *3/04*
U.S. Cl. 89—1.817 **22 Claims**

1. A frangible fly through diaphragm assembly for missile launcher tube closures, comprising:

a. a first fabric layer forming a first ply;

b. a second fabric layer forming a second ply;

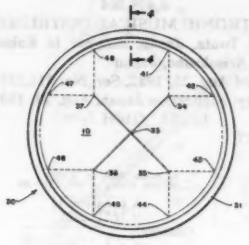
c. said first and second plies each being operable to tear easily along paths in two directions and to resist tearing in all other directions;

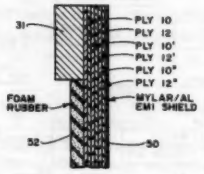
d. said first ply having score lines in a first geometric pattern;

e. said second ply having score lines in a second geometric pattern;

f. said first ply and said second ply being impregnated with an adhesive and bonded together to form a diaphragm unit with the score lines of said first ply being aligned with the direction of the tear paths of said second ply, and score lines of said second ply being aligned with the directions of the tear paths of said first ply;

g. said diaphragm unit being operable to resist a large uniformly distributed pressure load and fail under a lower concentrated central loading by a missile nose cone; the tearing of said diaphragm unit being controlled by the arrangement of said first and second plies wherein the score pattern of one ply aligned with the tear direction of the adjacent ply forms a geometric tear pattern for said





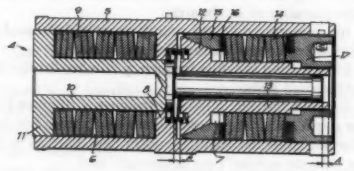
diaphragm unit which allows for minimum drag force on a missile as it is launched.

4,498,369

HIND ABSORBER FOR AUTOMATIC FIRE-ARMS ACTUATED BY BARREL RECOIL

Georges J. L. Kaiser, Chaudfontaine, Belgium, assignor to Fabrique Nationale Herstal, Belgium

Filed Feb. 24, 1983, Ser. No. 469,406
Claims priority, application Belgium, Mar. 19, 1982, 2/59636
Int. Cl.³ F41D *11/12*
U.S. Cl. 89—198 **4 Claims**



1. A rear block for an automatic fire arm comprising: a casing having a longitudinal axis and an interior wall; said interior wall having an inwardly extending portion in a mediate area; a pad slidably positioned within the casing for movement along the axis in response to a recoil force; a front damping stage on one side of the inwardly extending portion comprising front resilient means positioned between an area of the pad and said inwardly extending portion so that said front resilient means is loaded when the pad moves relative to the casing along said axis in one direction and is unloaded when the pad moves relative to the casing in the opposite direction; a rear damping stage on the other side of the inwardly extending portion comprising a thrust cone axially slidable within the casing so that a portion of the thrust cone is engageable with a portion of the pad after the pad is moved an initial distance along said axis, a radially expansible and axially slidable ring engageable with the thrust cone and the interior wall of the casing, rear resilient means engageable with the ring so that said rear resilient means is loaded when the ring moves relative to the casing along said axis in one direction and is unloaded

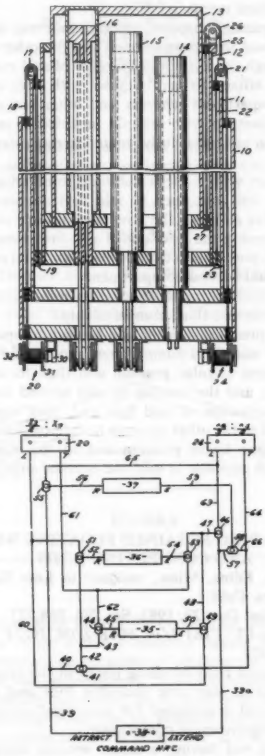
when the ring moves relative to the casing in the opposite direction; adjustment means for adjusting the axial position of the rear damping stage relative to the pad so that said initial distance is variable and whereby the force applied to the pad which is required to begin loading the rear damping stage is variable.

4,498,370

POWER TRANSMISSION

Robert H. Breeden, Metamora, and Henry D. Taylor, Pontiac, both of Mich., assignors to Vickers, Incorporated, Troy, Mich.

Filed Feb. 22, 1982, Ser. No. 351,180
Int. Cl.³ F15B 11/22
U.S. Cl. 91—171 6 Claims



1. A hydraulic system for synchronizing the movement of telescoping sections of a crane boom comprising a fixed section and first and second movable sections that can be extended and retracted,

a first hydraulic actuator between said fixed section and said first movable section for extending and retracting said fixed section relative to said first movable section,

a second hydraulic actuator between said first movable section and said second movable section for extending and retracting said second movable section relative to said first movable section,

first and second pilot operated directional valves for controlling the flow rate of fluid to said first and second actuators, respectively,

each said directional valve having openings to which pilot pressure is selectively applied to extend or retract its respective actuator,

a command hydraulic remote control valve for applying pilot pressure to said first and second directional control valves simultaneously,

cable means between said fixed section and said first and second movable sections positioned such that non-uniformity in movement between said sections causes a change in displacement of said cable means,

a position signal sensing means associated with said cable means for producing a pilot pressure signal in response to variations in the tension on the cable means as a result of non-uniformity in movement of the respective sections,

and means hydraulically connected to said command valve and said sensing means and responsive to the pilot pressure signal from the command valve and any signal from the sensing means for modifying the pilot pressure signal to the directional valves so that the flow of hydraulic fluid to the hydraulic actuators is modified to reduce the flow rate of fluid to the one actuator which is moving faster than the other in order to maintain synchronism between the movement of the first and second sections.

6. A hydraulic system for synchronizing the movement of telescoping sections of a crane boom comprising a fixed section and first and second movable sections that can be extended and retracted,

a first hydraulic actuator between said fixed section and said first movable section for extending and retracting said first movable section,

a second hydraulic actuator between said first movable section and said second movable section for extending and retracting said second movable section relative to said first movable section,

first and second pilot operated directional valves for controlling the operation of said first and second actuators, respectively,

each said directional valve having openings to which pilot pressure is selectively applied to extend or retract its respective actuator,

a command hydraulic remote control valve for applying pilot pressure to said first and second directional control valves simultaneously,

cable means between said fixed section and said first and second movable sections positioned such that non-uniformity in movement between said sections causes a change in displacement of said cable means,

a position signal means associated with said cable means for producing a pilot pressure signal in response to variations in the tension on the cable means as a result of non-uniformity in movement of the respective sections,

and means responsive to the pilot pressure signal from the command valve and any signal from the sensing means for modifying the pilot pressure signal to the directional valves so that the flow of hydraulic fluid to the hydraulic actuators is modified to further extend or retract the sections in order to maintain synchronism between the movement of the first and second sections,

a third movable section that can be extended or retracted,

a third hydraulic actuator between said second movable section and said third movable section for extending and retracting said third movable section relative to said second movable section,

a third pilot operated directional valve for controlling the operation of said third actuator,

said command hydraulic remote control valve applying pilot pressure to said third directional control valve simultaneously with said first and second directional valves,

second cable means between said fixed section, second and third sections such that non-uniformity and movement between said fixed section, second and third sections causes a change in displacement of said second cable means,

said means responsive to the pilot pressure signal from the command valve and any signal from the second sensing

means as well as the first sensing means to modify the flow to the first, second and third actuators to maintain synchronism between the first, second and third actuators,

said second cable means comprising a second cable having one end fixed to said third section,

a pulley on said second movable section,

a free pulley,

a third cable having one end fixed to said second movable section and trained over said free pulley,

said second cable being trained over said pulley and having its other end connected to the aforementioned free pulley,

a second drum mounted on said fixed section for rotation in two directions,

said third cable having its other end wound around said second drum,

a hydraulic motor applying a continuous torque to said second drum,

a cam attached to said drum,

said second position signal means comprising a second remote control valve connected to said command control valve and said first, second and third directional valves and having a cam follower bearing on the cam such that the pilot signals are produced by said second remote control valve when the second drum rotates in either direction.

4,498,371

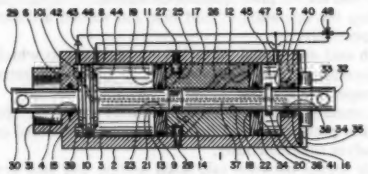
DIRECT ACTING ROTARY ACTUATOR CYLINDER

Yon S. Lew, and Hyok S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Filed Jun. 28, 1982, Ser. No. 392,629

Int. Cl.³ F01B *3/08*

U.S. Cl. 92—2 **10 Claims**



5. A direct acting rotary actuator cylinder with an initial linear movement comprising in combination:

(a) a cylinder including a first circular cylindrical cavity with a first end wall having a centrally disposed circular hole and a second end wall with a centrally disposed circular hole;

(b) a rod with a circular cross section coaxially disposed in said first circular cylindrical cavity with one extremity rotatably and slidably engaging and extending through the circular hole centrally disposed through said first end wall in an air-tight manner and the other extremity engaging and extending through the circular hole centrally disposed through said second end wall, said rod having a noncircular cross section over a mid-portion of its length wherein the minimum diametrical dimension of said noncircular cross section is greater than the diameter of said circular cross section;

(c) a first slidable partitioning body slidably disposed adjacent to said first end wall in said first circular cylindrical cavity and dividing said first circular cylindrical cavity into a first compartment adjacent to said first end wall and a second compartment in an air-tight manner, said first slidable partitioning body pierced by and rigidly affixed to said rod in an air-tight manner;

(d) a second slidable partitioning body slidably disposed adjacent to said second end wall in said first circular cylindrical cavity and dividing said first circular cylindrical cavity into said second compartment intermediate said first and second slidable partitioning bodies, and a third compartment adjacent to said second end wall in an air-tight manner, said second slidable partitioning body including;

(1) a first cylindrical member having a centrally located noncircular hole slidably and nonrotatably engaged by the noncircular portion of said rod at least in part and having a plurality of helical grooves of common pitches disposed on the outer cylindrical surface of said first cylindrical member, said plurality of helical grooves slidably engaged by a plurality of guide means affixed to the cylindrical wall of said first circular cylindrical cavity;

(2) at least one second cylindrical member having a centrally located circular hole slidably and rotatably engaged by the circular portion of said rod in an air-tight manner, said at least one second cylindrical member slidably engaging said first circular cylindrical cavity in an air-tight manner wherein said at least one second cylindrical member is kinematically linked to said first cylindrical member;

(e) a fluid passage disposed through said rod with one end open to said first compartment and the other end emerging through the cylindrical surface of said rod and into a seal ring affixed to said cylinder with a slit open to said third compartment wherein said other end of said fluid passage lines up with said slit included in said seal ring only when sad rod is fully rotated to one extreme angular position;

(f) a first port with a check valve disposed adjacent to said first end wall and open to said first compartment, said check valve allowing the flow into said first compartment and preventing the flow out of said first compartment;

(g) a second port disposed adjacent to said first end wall and open to said second compartment;

(h) a third port disposed adjacent to said second end wall and open to said third compartment;

whereby, the pressurization of said second compartment and the venting of said third compartment moves said rod first to said one extreme angular position and then to one extreme linear position, and the venting of said second compartment and the pressurization of said first and third compartments moves said rod to the other extreme linear position opposite to said one extreme linear position and to the other extreme angular position opposite to said one extreme angular position.

4,498,372

PUMP WITH RING RETAINED FLOATING WRIST PINS AND CONNECTING RODS

Ramon Pareja, Edina, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 23, 1983, Ser. No. 564,727

Int. Cl.³ F16J *1/14*; F04B *1/04, 39/14*

U.S. Cl. 92—187 **8 Claims**

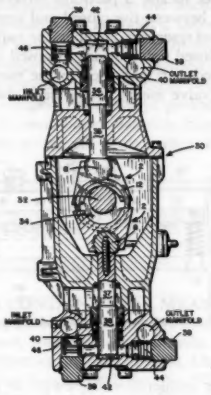
1. An improved fluid handling pump of the type having a crankshaft with at least one eccentric lobe and relative to which a push rod is mounted for reciprocal movement in a cylinder, the improvement comprising:

a connecting rod having a major arcuate lateral surface formed in one end thereof for mounting about said crankshaft eccentric and a second smaller arcuate lateral surface extending inwardly from the other end thereof and circumscribing an arc of greater than 180° and including a pair of arcuate grooves formed in opposed front and back surfaces of said connecting rod, said arcuate grooves being concentric with said major arcuate surface;

a cylindrical wrist pin having first and second outer opposed cylindrical end regions of slightly greater diameter than a centrally disposed cylindrical region therebetween, said cylindrical wrist pin having a flat area defining a zone of narrow lateral dimension; and

first and second retainer rings mountable in said arcuate grooves of said connecting rod, such that upon inserting the zone of said wrist pin of narrowest lateral dimension in the bore containing said second surface and rotating said

wrist pin, said first and second outer cylindrical end portions hold said retainer rings in said arcuate grooves, while



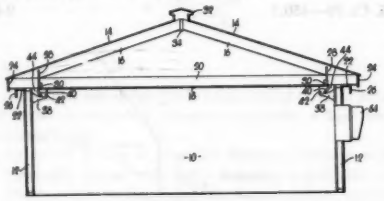
said central cylindrical region holds said wrist pin adjacent to said smaller arcuate lateral surface of said connecting rod.

4,498,373

AIR INLET SYSTEM

Willard W. Dittmer, Rte. 1, Box 250A, and Mark W. Dittmer, 111 E. 14th St., both of Higginsville, Mo. 64037

Filed Apr. 18, 1983, Ser. No. 485,746
Int. Cl.³ F24F 7/007
U.S. Cl. 98—33.1 **7 Claims**



1. In a ventilating system for controlling the humidity and temperature of air within a building having at least one air mover operable as an exhauster of air from the building to the atmosphere, the improvement of which comprises structure for automatically permitting air to flow from the atmosphere into the building when the air pressure therein drops below atmospheric upon actuation of said air mover, said structure including:

means including an elongated, inclined upwardly facing surface, presenting an airway above said surface having an upper air inlet communicating with the atmosphere and a lower air outlet discharging into the building;

an elongated, inclined air valve above said surface having a lowermost, longitudinal terminus normally resting on said surface under the influence of gravity in closed relationship to said airway; and

means at the uppermost extremity of the valve supporting the same for swinging movement about an essentially horizontal axis away from said surface to a position opening the airway in response to operation of said air mover,

said surface and the bottom face of the valve proximal to said surface having streamlined contours across which the air flows along the airway for reducing resistance to said flow, decreasing turbulence of the air within the airway and funneling the air along a well-defined continuous path from said inlet through said outlet,

at least a portion of the contour of said surface being transversely concave and at least a portion of the contour of said face of the valve being transversely convex,

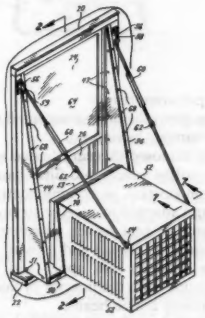
said concave and convex portions extending downwardly and inwardly from the air inlet toward the air outlet.

4,498,374

SPACE-DEFINING MOUNTING FOR ROOM COOLERS

David C. Gibson, 321 S. Elm Ave., Webster Groves, Mo. 63119

Filed Feb. 7, 1983, Ser. No. 464,335
Int. Cl.³ E06B 7/10
U.S. Cl. 98—94.2 **9 Claims**



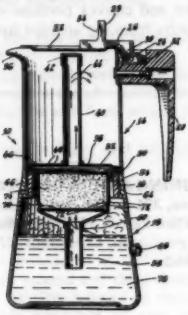
1. A space-defining mounting, for a window-type air-conditioning unit that is disposed adjacent a sash-equipped window of a building and that has a vented protective housing and that has all portions thereof other than the electric cord disposed wholly outwardly of the lower sash of said window, which comprises a platfrom that is securable in a position, adjacent the lower portion of said window, wherein all portions of said platform are disposed wholly outwardly of said lower sash of said window and wherein said platform has a portion thereof extending outwardly from said building to underlie and help support said air-conditioning unit, horizontally-spaced vertically-directed, substantially air-impervious side members that are disposable adjacent the opposite sides of said window and that have all portions thereof disposed outwardly of said lower sash of said window, said side members having lower portions that will be disposed wholly inwardly of the vents in said housing for said air-conditioning unit and that will be coextensive in part with portions of said housing for said air-conditioning unit, and a substantially air-impervious member which is disposable immediately adjacent portions of said housing for said air-conditioning unit that are disposed inwardly of said vents in said housing for said air-conditioning unit and which is extendable outwardly and upwardly from said housing for said air-conditioning unit toward said side members, said platform and said side members and said substantially air-impervious member being adapted to coact with said lower sash for said window and with said housing for said air-conditioning unit, whenever said lower sash is in its closed position, to help define an insulating air space that is external of, but that is close to, said lower sash, said platform and said side members and said substantially air-impervious member being adapted to coact with said housing for said air-conditioning unit to provide a barrier to the elements when said lower sash is raised to permit operation of said air-conditioning unit.

4,498,375

AUTOMATIC COFFEE POT

Dante Bedini, 680 Knapps Hwy., Fairfield, Conn. 06430

Filed Mar. 1, 1984, Ser. No. 585,259
Int. Cl.³ A47J *31/30*
U.S. Cl. 99—303 **20 Claims**



1. A coffee pot comprising:

an upper chamber releasably connected to a lower chamber, said lower chamber having

a filter basket disposed therein adapted to receive a quantity of ground coffee beans, said filter basket having

a hollow stem portion in communication with said lower chamber and adapted to receive steam generated by heating of water in said lower chamber which is directed through said filter basket and ground coffee beans,

a filter plate between said upper and lower chambers in communication with the interior of said filter basket housing said ground coffee beans,

a solid plate forming a liquid holding bottom for said upper chamber provided in said upper chamber in spaced relation above said filter plate,

an elongated tubular member seated on said solid plate and having one end provided with an opening in communication with the space between said filter plate and said solid plate, the other end of said elongated tubular member being closed, and

an orifice formed in the side wall of said elongated tubular member providing communication along with said opening in said one end between the interior of said upper chamber and the space between said solid plate and said filter plate,

a lid pivotally mounted on said upper chamber for substantially closing said upper chamber, and

means on said filter basket stem portion disposed in said lower chamber providing communication between the interior of said filter basket and said lower chamber for increasing the flow of steam generated upon heating of water in said lower chamber through said stem and filter basket.

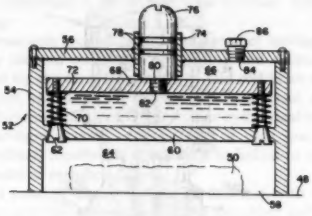
4,498,376

PIZZA COOKING UTENSIL

Thomas F. Carey, P.O. Box 992, Miami, Okla. 74354

Filed Sep. 2, 1983, Ser. No. 528,940
Int. Cl.³ A47J *37/10*
U.S. Cl. 99—345 **3 Claims**

1. A pizza cooking utensil comprising a housing having one closed end and one open end adapted to be disposed on a hot cooking surface for providing a chamber to encase a pizza; a fluid reservoir chamber provided in the housing; valve means interposed between the fluid reservoir chamber and pizza encasing chamber to provide selected communication therebetween; actuator means operably connected with the valve means for opening thereof to establish communication between the fluid reservoir chamber and pizza encasing chamber whereby moisture may be selectively added to the pizza encasing chamber; the closed end of the housing being closed by removable cover means; a partition provided in the housing and interposed between the closed and open ends thereof to provide said fluid reservoir chamber; the valve means comprising normally closed valve means disposed in the partition, at least one tapered port provided in the partition, and spring urged tapered valve means reciprocally disposed within the



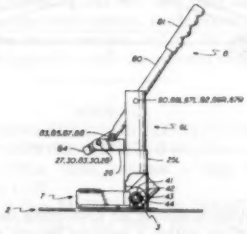
tapered port for cooperation therewith to provide alternate open and closed communication between the fluid reservoir chamber and the pizza encasing chamber; and wherein the tapered valve means is carried by reciprocal plate means disposed within the fluid reservoir chamber and selectively movable against the force of the spring urged tapered valve means for providing the open communication between the fluid reservoir chamber and the pizza encasing chamber.

4,498,377

GOURMET HOT TAMALE MACHINE

Earnest L. Smith, 6738 Ave. N, Houston, Tex. 77011

Filed Jul. 17, 1984, Ser. No. 631,737
Int. Cl.³ A21C *3/04, 9/00, 9/06*
U.S. Cl. 99—450.7 **9 Claims**



1. A barrel member of a hot tamale machine comprising a main element in the general form of a right cylinder elongated along its longitudinal axis and having openings at one end defining a discharge orifice, and also comprising a pair of side-by-side stub tubes secured to and extending from the cylinder outwardly from its longitudinal axis, each of such stub tubes defining a generally cylindrical passageway open at its outer end,

said cylinder being hollow over a portion contiguous with its discharge end to define an outer wall and having a cylindrical passageway coaxial with the longitudinal axis of the cylinder and extending from the discharge orifice to one of the stub tubes where it intersects and joins with the passageway of such stub tube so that the two form a single (first) L-shaped passageway which is isolated from all other passageways, said barrel also comprising a generally cylindrical small tube disposed within the passageway of the main cylinder and also coaxial with the longitudinal axis thereof, such small tube being of smaller cross-section than its accommodating passageway and defining therein

an annulus lying between the outer surface of the small tube and the wall of such passageway, such small tube extending longitudinally from the discharge orifice to the other of the stub tubes and joined thereto so that its hollow interior joins the passageway of the stub tube so that the two passages form a single (second) L-shaped pasageway which is isolated from all other passageways, each of the two L-shaped passageways providing a continuous flow path for semi-liquid materials from the outer end of the stub tube to the discharge orifice of the barrel.

4,498,378

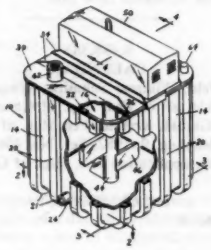
VACUUM CONTAINER FOR MEAT PRODUCTS

Lyle W. Norrie, Etobicoke; Robert W. Snider, King City, and Knud Simonsen, Nobleton, all of Canada, assignors to Knud Simonsen Industries Limited, Rexdale, Canada

Filed Sep. 6, 1983, Ser. No. 529,522

Int. Cl.³ A23B *4/02*; B01F *7/16*

U.S. Cl. 99—472 **5 Claims**



1. Container apparatus for the processing of meat products, both under atmospheric pressure and under a high vacuum, and comprising:

a container having a generally flattened bottom wall and generally planar side walls defining a generally square cross section having inner and outer surfaces, and having an open top;

a plurality of reinforcing channel sections located at spaced-apart intervals along each of said side walls, on the exterior thereof and on the exterior of the bottom wall, said reinforcing channels being of generally uniform three-sided shape having continuous side portions welded on the exterior of said walls of said container, and a continuous planar web portion extending between said side portions spaced from said container walls thereby forming, with said container walls, continuous generally tubular enclosures of rectangular cross-section, whereby to resist implosion due to vacuum within said container;

a top edge around the upper edges of said four side walls adapted to receive a closure member;

a closure member for said open top of said container adapted to hermetically seal the same;

stirring mechanism supported on said closure member, and stirring motor means supported above said closure member, and having drive means extending from said motor, through said closure member into driving connection with said stirring means;

reinforcing means extending across the upper surface of said closure member for resisting implosion forces, and,

hose connection means on said closure member for connection to suitable vacuum pump means.

4,498,379

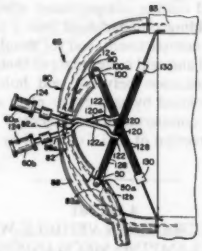
METHOD FOR FORMING WIRE CONNECTION

Millard P. Saylor, 1125 W. Greenbriar, Arlington Heights, Ill.

Division of Ser. No. 459,945, Jan. 21, 1983, Pat. No. 4,450,763, which is a continuation-in-part of Ser. No. 273,252, Jun. 12, 1981, abandoned. This application Dec. 23, 1983, Ser. No. 564,842

Int. Cl.³ B65B *13/28*

U.S. Cl. 100—2 **3 Claims**



1. A method of automatically applying and connecting a continuous loop of bale wire to a bale of material without manual labor comprising the steps of:

feeding wire around from a continuous coil through a guide situated adjacent the periphery of a bale of material;

overlapping an end portion of said fed wire with another portion thereof after being looped around the bale;

cutting the wire at said another portion to create a second wire end portion;

looping both end portions of said wire back to form interengaging loops coupling said wire end portions together; and

twisting two portions of said wire together adjacent each of said loops to form and support said interengaging loops.

4,498,380

APPARATUS FOR CUTTING FOODSTUFFS

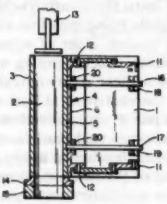
Helmut Maus, Pleckhausen, Fed. Rep. of Germany, assignor to Holac Maschinenbau GmbH, Heidenheim/Brenz, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 481,646

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1982, 3213175

Int. Cl.³ B30B *15/08*

U.S. Cl. 100—98 R **7 Claims**



1. An apparatus for cutting foodstuffs and the like comprising an open-end, open-top tubular foodstuff cutting compartment formed by a bottom wall and two lateral side walls one of which is a press wall movable with respect to the other, fixed side wall and which, in its unretracted or closed position, forms therewith a compartment of rectangular cross-sectional configuration; an open-bottm foodstuff holding compartment of similar cross-sectional configuration positioned above said cutting compartment and communicating therewith whereby foodstuff can be fed thereto; foodstuff cutting means posi-

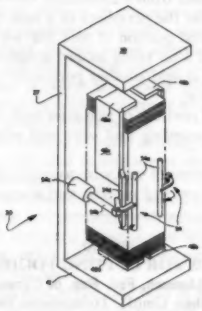
tioned at one end of said cutting compartment and a piston at the other end for moving foodstuff therethrough and against said cutting means; a cover plate located on the same side of the cutting compartment as said press wall for closing communication between said holding and said cutting compartments; a movable compacting wall located in front of, and adapted to be contacted by, said press wall; and a foodstuff compacting piston operatively associated with said press wall and said cover plate for simultaneously retracting both from their closed positions along an axis perpendicular to the axis of movement of said cutting compartment whereby foodstuff is fed from said holding compartment into a resultant laterally expanded cutting compartment, and for simultaneously returning said press wall and said cover plate to their closed positions whereby communication between said holding and cutting compartments is closed by said cover plate and foodstuff fed into said cutting compartment is subjected to a lateral prepressing in the direction of said fixed wall by said compacting wall.

4,498,381

SIGNATURE TRANSFER VEHICLE WITH STACK CLAMPING MECHANISM

Frank H. Convey, Jr., Peru, N.Y., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Jul. 28, 1983, Ser. No. 518,014
Int. Cl.³ B30B *15/06*
U.S. Cl. 100—100 **6 Claims**



1. Apparatus for engaging a stack of signatures on a stacker and for removing the stack of signatures from the stacker, said apparatus comprising a transfer vehicle which can move toward a stack of signatures on the stacker, a clamping mechanism connected with the transfer vehicle to clamp the stack, said transfer vehicle being movable away from the stacker to move from the stacker a set of signatures clamped by said clamping mechanism, said clamping mechanism comprising a pair of clamp assemblies that are movable toward each other to clamp the stack therebetween, at least one of said clamp assemblies including a pair of clamp members, and means for moving said clamp members in said one clamp assembly linearly and independently of each other to apply pressure to at least two points at one end of the stack to insure adequate compression of the stack even at different initial height of the stack at said two points.

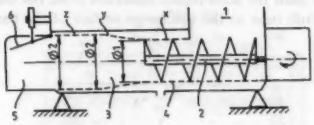
4,498,382

SCREW PRESS FOR GRAPE CROP

Jean Pera, Florensac, and Didier Pera, Montblanc, both of France, assignors to Societe S.O.M.A.V.I., Florensac, France

Filed Jun. 20, 1983, Ser. No. 505,634
Claims priority, application France, Mar. 28, 1983, 83 05068
Int. Cl.³ B30B *9/14*
U.S. Cl. 100—117 **2 Claims**

1. A screw press comprising a hopper for reception of grape crop, a compression chamber, a helical screw which conveys and compresses grapes in said compression chamber, an outlet end, grids and a filter tube formed from said grids, said filter tube including a first cylindric section extending up to the downstream end of the screw and a second divergent or conical section starting from a diameter equal to the diameter of the first section and terminated by a higher diameter at the outlet end and a third cylindric section between said divergent or



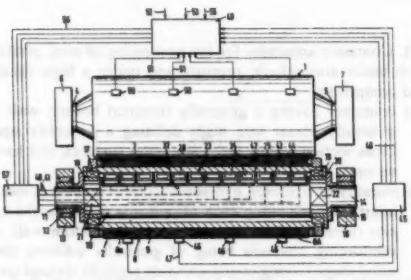
conical section and said outlet end, said third cylindric section having a length such that the marc cake is reconstituted at said outlet end of the press whatever be the composition of the grape crop, said filter tube diverging from a determined section of its length in the downstream direction such that said divergence enables the grapes to be freed and prevents formation of an impermeable crust in the filtering tube thereby resulting in total pressing and increased flow rate.

4,498,383

CALENDAR

Josef Pav, Krefeld; Wimmar Schmitz, Kempen, and Reinhard Wenzel, Krefeld, all of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,494
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1981, 3131799
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—162 B **31 Claims**



1. In a machine for treating running webs or the like, particularly in a calender for treating sheets of paper and the like, a system comprising a first roll; a second roll including a hollow at least partly elastic rotary shell defining with the first roll an elongated nip, a carrier spacedly surrounded by said shell, and supporting means interposed between said shell and said carrier and including a plurality of adjustable force applying devices distributed in said shell in the longitudinal direction of said nip and arranged to apply forces against the respective portions of said shell to thereby influence the temperature of such portions, each of said rolls having an external surface and at least that portion of one of said rolls which is adjacent to the respective external surface consisting of a viscoelastic material; means for ascertaining the temperatures of at least some of said portions and for generating signals denoting the ascertained temperatures; means for comparing said signals with reference values denoting the desired temperatures of said portions; means for adjusting said force applying devices when the

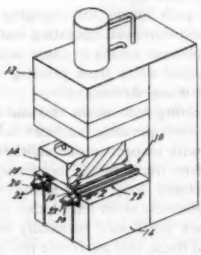
ascertained temperatures of the respective portions of said shell deviate form the corresponding reference values, said comparing means comprising means for evaluating said signals and for transitting to said adjusting means second signals when the signals furnished by said ascertaining means deviate from said reference values; and means for transmitting to said evaluating means additional signals denoting at least one variable parameter of the running web which influences the temperature of said shell, said evaluating means being operative to modify said second signals as a function of the characteristics of such additional signals.

4,498,384

DIE TRANSFER SYSTEM

William P. Murphy, 1067 Kennesaw Ave., Birmingham, Mich. 48008

Filed Jul. 7, 1983, Ser. No. 511,548
Int. Cl.³ B30B *15/02*
U.S. Cl. 100—224 **1 Claim**



1. A die transfer system for a press having a bolster with a surface for the support of a die, said system comprising means on said bolster defining a pair of elongated, parallel upwardly opening cavities, each of said cavities having a horizontally extending vertically movable rail therein with oppositely longitudinally extending ends at the lowermost portions thereof, a plurality of rollers supported by said rail and movable vertically therewith, an air bag extending longitudinally of said cavities under said rail and engageable with the bottom thereof, inflation of said air bag effecting elevation of said rail and rollers into engagement with the bottom of said die and elevation of said die relative to said bolster, and limiting means engageable with said rail to limit upward movement thereof comprising a pair of inverted U-shaped stops each defined by a horizontal uninterrupted bight portion and spaced downwardly extending leg portions, the bight portions of said stops overlying said opposite end portions of said rail but being disposed entirely below the die support surface of said press bolster.

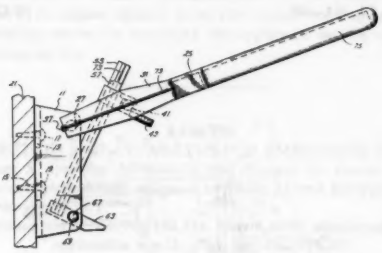
4,498,385

CAN CRUSHER

Norman G. Manley, 15809 Bootl. Cir., Volente, Tex. 78641

Filed Aug. 23, 1982, Ser. No. 410,362
Int. Cl.³ B30B *7/00*
U.S. Cl. 100—233 **12 Claims**

1. A crusher comprising
a base,
a handle, first single axis pivot means pivotally connecting the handle to the base constraining the handle to motion of rotation relative to the base about said single axis of said first single axis pivot means while preventing relative translation of the handle and base,
an upper crusher plate, second single axis pivot means pivotally connecting said upper crusher plate to the handle providing a single axis of rotation that is stationary relative to both the handle and upper crusher plate and constraining said upper crusher plate to motion of rotation relative to said handle about said single axis of said second single axis pivot means while preventing relative translation of said upper crusher plate and said handle,
a lower crusher plate, third single pivot axis means pivotally connecting said lower crusher plate to the base constraining said lower crusher plate to motion of rotation about said single pivot axis of said third single pivot axis means relative to the base, while preventing relative translation of said lower crusher plate and base, and
positioning means maintaining said plates parallel to each other while the lower plate rotates relative to the base.

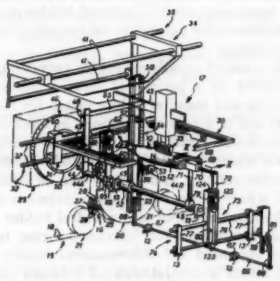


4,498,386

SILK SCREEN PRINTING MACHINE

Eric Rouly, Saint-Maur, and Jean-Pierre Douville, Gagny, both of France, assignors to Societe d'Exploitation des Machines Dubuit, Paris, France

Filed Jun. 7, 1983, Ser. No. 501,878
Int. Cl.³ B41F *17/22*
U.S. Cl. 101—40 **10 Claims**



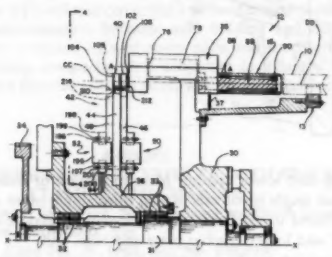
1. A silkscreen printing machine of the kind comprising at least one printing station, a conveyor carrying at least one workholder adapted to support an object to be printed and, at said printing station, a screen being carried by a screen support carriage which is mounted to be movable to-and-fro on a guide, a squeegee being carried by a squeegee support carriage which is mounted to be movable to-and-fro on a guide parallel to said screen support carriage guide, and a bearing block for bearing on the object to be printed and controlling its angular orientation relative to an axis transverse to the screen support carriage and squeegee support carriage guides, said bearing block being keyed to a first lever so as to rotate therewith, said first lever by virtue of engagement means being adjustable along its length and meshing with a control carriage mounted movably on a guide in synchronism with the squeegee support carriage.

4,498,387

CAM ASSEMBLY FOR SKIP-PRINT MANDREL WHEEL ASSEMBLY

James S. Stirbis, Littleton, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Oct. 21, 1983, Ser. No. 544,015
Int. Cl.³ B41F 17/22
U.S. Cl. 101—40 **19 Claims**



1. A mandrel assembly for use in a continuous printing machine for cylindrical containers comprising:

a. mandrel wheel means for supporting cylindrical container receiving apparatus thereon, said mandrel wheel means having a central axis of rotation positioned in parallel alignment with a central axis of rotation of an associated blanket wheel device carrying a printing medium on a circumferential portion thereof for printing on said cylindrical containers carried by said mandrel wheel means;

b. at least one mandrel holder means for supporting a mandrel spindle means thereon, pivotally mounted on a circumferential portion of said mandrel wheel means for pivotal movement about a mandrel holder pivot axis positioned substantially parallel to said mandrel wheel central axis of rotation;

c. elongate mandrel spindle means for supporting a cylindrical container on a peripheral surface thereof, rotatably mounted on said mandrel holder means for rotation about a central axis of rotation positioned in substantially parallel, non-coaxial relationship with said mandrel holder pivot axis whereby said mandrel spindle means is radially displaceable relative said central axis of rotation of said mandrel wheel means by pivotal movement of said mandrel holder means about said mandrel holder pivot axis;

d. cam follower means for following a cam track means, rotatably mounted on said mandrel holder means for rotation about a central axis of rotation positioned in substantially parallel, non-coaxial relationship with said mandrel holder pivot axis whereby said mandrel holder means is pivotally displaced about said mandrel holder means pivot axis by radial displacement of said cam follower means relative said central axis of rotation of said mandrel wheel means;

e. cam track means operably associated with said cam follower means for guiding said cam follower means and for causing preselected relative radial displacement thereof with respect to said central axis of rotation of said mandrel wheel means for causing preselected radial displacement of said mandrel spindle means relative said blanket wheel device whereby when said mandrel wheel means is in a rotated position associated with cylindrical container printing, and when said mandrel spindle is in a normal operating state wherein said mandrel spindle has a cylindrical container properly seated thereon, said mandrel spindle is positioned to urge said cylinder container into printing contact with said blanket wheel device; and whereby when said mandrel wheel means is in said rotated position associated with cylindrical container printing and when said mandrel spindle is in a skip-print operating wherein said mandrel spindle does not have a cylindrical container properly seated thereon, said mandrel spindle is positioned in radially spaced apart, non-engaging relationship with said blanket wheel device; and

f. control means for sensing the position of a can on an associated mandrel wheel and actuating said cam track means in response to the can position;

wherein said cam track means comprises a cam track printing portion thereon associated with movement of said mandrel spindle means into a proximate relationship with the blanket wheel device and wherein said cam track printing portion comprises:

printing path means for engaging said cam follower means in said normal operating state and for guiding said cam follower means to cause a printing engagement between the blanket wheel device and a container carried by said mandrel spindle, and

skip-printing path means for engaging said cam wheel means in said skip-print operating state and for guiding said cam follower means to cause said mandrel spindle to be deflected away from printing engagement with the blanket wheel device;

wherein said printing path means and said skip-printing path means comprise operating surfaces which are radially displaceable with respect to one another;

wherein said cam track means comprises a substantially continuous, closed loop, cam follower engaging fixed track and a relatively short length cam follower engaging moveable track positioned in axially offset relationship with said fixed track, said moveable track being positioned within said cam track printing portion;

wherein said printing path means comprises one of said fixed track and said moveable track and wherein said skip-printing path means comprises the other of said fixed track and said moveable track;

moveable track movement means for radially moving said second track relative said first track between a skip-print operating position and a normal operating position;

wherein said moveable track movement means comprises:

first roller means having an axis fixedly attached to said moveable track means;

second roller means having an axis positioned in parallel relationship with said first roller means axis, said second roller means axis being fixed relative fixed track;

wedge means positionable between said first and second roller means in contacting engagement therewith; and

wedge movement means for moving said wedge means between said first and second roller means for causing displacement of said first roller means relative said second roller means.

4,498,388

PRINT HAMMER MECHANISM HAVING INTERMEDIATE PIVOT FULCRUM

Norman E. Farb, Villa Park, Calif., assignor to Printronix, Inc., Irvine, Calif.

Continuation of Ser. No. 406,035, Aug. 6, 1982, abandoned. This application May 3, 1984, Ser. No. 606,650
Int. Cl.³ B41J 3/10
U.S. Cl. 101—93.04 **9 Claims**

1. A print hammer mechanism comprising:

a resilient hammer element having opposite fixed and free ends, the free end of the hammer element having structure mounted thereon consisting of a dot imprinting tip of relatively small size and mass;

a magnetic structure mounting the hammer element at the fixed end of the hammer element;

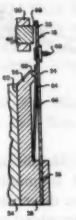
a pole piece mounted on the magnetic structure and termi-

nating in a pole tip disposed in facing relation to the free end of the hammer element;

a hammer element impact arrangement disposed in facing relation to the hammer element at an intermediate portion of the hammer element between the fixed end and the free end of the hammer element, the impact arrangement having a surface facing the intermediate portion of the hammer element and covered with an elastomeric material;

the hammer element being spaced apart from both the pole tip and the impact arrangement when in a neutral, unflexed position and being of generally planar configuration and being positioned to impact the impact arrangement approximately at the node of the second order of vibration of the hammer element in the plane of the hammer element; and

means coupled to the magnetic structure for providing a magnetic field which normally attracts the hammer element toward the pole tip and the impact arrangement, the pole tip and the impact arrangement being disposed so that the hammer element impacts and resides against the impact arrangement and forms an air gap with the pole tip when the hammer element is caused to flex into a retract position by the magnetic field.



4,498,389

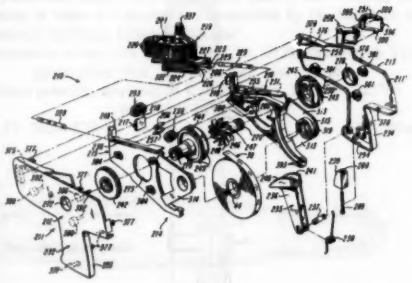
LABELER WITH INKING MECHANISM

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 193,553, Oct. 3, 1980, abandoned, which is a division of Ser. No. 653,403, Jan. 29, 1976, Pat. No. 4,249,973, Division of Ser. No. 540,051, Jan. 10, 1975, Pat. No. 3,952,652, which is a division of Ser. No. 312,454, Dec. 6, 1972, Pat. No. 3,968,745, which is a continuation-in-part of Ser. No. 208,035, Dec. 8, 1971, abandoned. This application Feb. 17, 1983, Ser. No. 467,579

Int. Cl.³ B41K *1/42, 1/46*

U.S. Cl. 101—288 **14 Claims**



1. A hand-held label printing and applying machine for printing on labels carried on a web of supporting material, comprising: a housing having a first housing section and a second housing section, the first housing section having a handle, a print head mounted by the first housing section, means disposed in space within the housing for inking the print head, means for movably mounting the second housing section relative to the first housing section to afford access to the inking means, means for delaminating a printed label from the web, an applicator disposed adjacent the deliminating means, means including an actuator disposed at the handle of advancing the web to effect label delamination at the delaminating means, and means spaced from the second housing section mounting means for mounting the applicator on the second housing section.

4,498,390

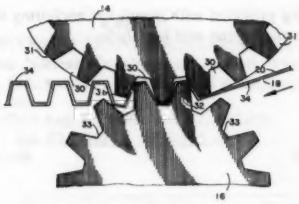
METHOD AND APPARATUS FOR EMBOSSING FOIL

James A. Bowling, Midlothian, and Wallace M. David, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 148,316, May 9, 1980, abandoned. This application Sep. 3, 1981, Ser. No. 299,262

Int. Cl.³ B41F *31/02*

U.S. Cl. 101—365 **9 Claims**



1. A method of embossing a sheet of metallic foil in at least one pair of complementary embossing dies having male and female die portions comprising:

a. providing a sheet of compressible deformable material;

b. layering said compressible deformable sheet with a sheet of said metallic foil;

c. placing said sheets between said male and female die portions with the metallic foil surface facing the male die portion

d. bringing said die portions together under pressure with male and female portions in register to compress said metallic foil against a surface of a die portion with yieldable force.

4,498,391

EXPLOSIVE MINE BREAKING APPARATUS WITH ARC-SUPPRESSING HEAT-DISSIPATING FLUID AROUND THE CHARGE BODIES

György Gergö, Pécs; József Németh, Budapest; Béla Sebestyén, and Béla Solymossy, both of Pécs, all of Hungary, assignors to Mecseki Szénbányák, Komját Aladár, Hungary

Filed Jun. 2, 1983, Ser. No. 500,294

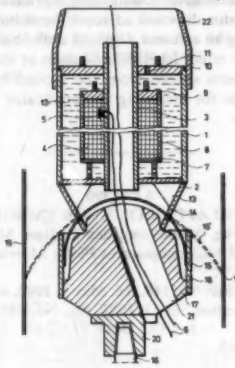
Claims priority, application Hungary, Jun. 4, 1982, 1810/82

Int. Cl.³ F42D *3/00*

U.S. Cl. 102—312 **3 Claims**

1. A breaking apparatus for steep dip strong-coal deposits in an explosive atmosphere, comprising a succession of explosive units spaced apart within a bore hole, each of said explosive units including a core tube, an explosive charge body surrounding said core tube, an igniter anchored in said charge body and having a conductor extending into said charge body through the respective core tube, and means for maintaining an arc-suppressing heat-dissipating fluid all around said charge body and said core tube, the conductors of the igniters more

remote from an inlet of said bore hole traversing the core tubes of each of the units more proximal to said inlet, each of said



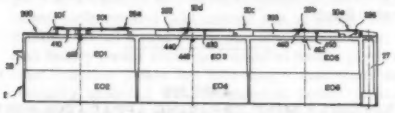
units being provided with means for anchoring same at a selected location along said bore hole.

4,498,392

INFRARED DECOY LAUNCHING DEVICE TO BE DEPLOYED RAPIDLY WITH A DOUBLE SAFETY DEVICE

Alain A. Billard, Muret; Hubert C. Calmettes, Toulouse, and Roland C. Encoyand, Muret, all of France, assignors to Etienne LaCroix - Tous Artifices, Muret, France

Filed Jun. 1, 1982, Ser. No. 384,098
Claims priority, application France, Jun. 3, 1981, 81 10976
Int. Cl.³ F42B 4/22, 4/24; F41F 5/02
U.S. Cl. 102—342 9 Claims



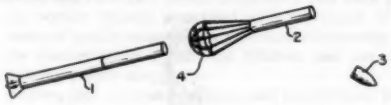
1. An infrared decoy launching device, comprising a launcher case as well as at least one infrared decoy member able to be housed in this case and provided with a pyrotechnic chain for the ejection of the decoy in a given direction from the case and ignition characterized by the fact that the decoy member has a major dimension which extends transversely to the direction of ejection in the launcher case and that the pyrotechnic chain is provided in order to bring about an ejection of the decoy member transversely with respect to its major dimension at a low speed, the pyrotechnic chain including ejection means having a barrel defined in the decoy member in axial alignment with the ejection direction and an ejection cartridge containing an ejection charge slidably received in this barrel to eject the decoy member in alignment with the ejection direction at a low speed with a high but short acceleration.

4,498,393

PROCESS FOR THE DISTRIBUTION OF SUBMUNITION

Klaus Fischer, Troisdorf; Heinz Kroschel, Troisdorf-Sieglar; Joachim Nicodemus, Cologne, and Willi Petters, Leverkusen, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,788
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111907
Int. Cl.³ F42B 13/50, 25/16
U.S. Cl. 102—393 9 Claims



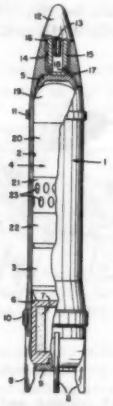
1. A process for the distribution of submunition wherein a plurality of individual submunitions completely accommodated within at least one dispensing unit of a carrier projectile are released at a predetermined point in time, characterized in that the at least one dispensing unit is ejected in a defined fashion at a predetermined instant from the carrier projectile by being guided during the ejection movement in the carrier projectile, and is maintained in a stable flight position at a spacing from the carrier projectile; and that the carrier projectile and the at least one dispensing unit are differently decelerated so that the trajectories of the carrier projectile and the at least one dispensing unit diverge, and finally the plurality of individual submunitions which are completely accommodated within the at least one dispensing unit are ejected from the at least one dispensing unit.

4,498,394

ARRANGEMENT FOR A TERMINALLY GUIDED PROJECTILE PROVIDED WITH A TARGET SEEKING ARRANGEMENT AND PATH CORRECTION ARRANGEMENT

Christer Regebro, Eskilstuna, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Nov. 4, 1982, Ser. No. 439,026
Claims priority, application Sweden, Nov. 12, 1981, 8106719
Int. Cl.³ F42B 13/24, 13/50
U.S. Cl. 102—489 9 Claims



1. Arrangement for launching a terminally guided fin-stabilized mortar projectile provided with a target seeking arrangement and a path correction arrangement, and comprising: an

artillery shell capable of being fired from the rifled barrel of an artillery gun and which is provided with a central, extended cavity; said terminally guided fin-stabilized mortar projectile positioned within said cavity coaxially with the artillery shell; a separation charge provided in the artillery shell which at a desired point in its ballistic path will eject the mortar projectile so that with the aid of the said target seeking arrangement and the path correction arrangement the projectile can subsequently be terminally guided towards a selected target.

4,498,395

POWDER COMPRISING COATED TUNGSTEN GRAINS

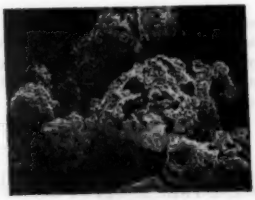
Wulf Kock; Rainer Schmidberger, both of Markdorf, and Wolfgang Wagner, Weingarten, all of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,510

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3226648

Int. Cl.³ F42B *11/00*; C22C *1/02*

U.S. Cl. 102—517 **27 Claims**



1. A heterogeneous powder comprising particles of tungsten grains with a diameter of less than 1 μm with a binder sponge-like coating of at least one metal selected from the group consisting of nickel, copper, silver, iron, cobalt, molybdenum and rhenium with a particle diameter of 10 to 50 μm.

18. A method of forming sintered elements comprising compressing the heterogeneous powders of claim 1 to form a compact of the desired shape with a high green density and sintering the compact at 600° to 1300° C. in a reducing atmosphere and degassing the sintered body whose structure is pore free and consists of polygonal tungsten grains with a mean diameter less than 5 μm which substantially occupy all the space therein with a thin layer of binder between them.

4,498,396

2.75 INCH PLASTIC WARHEAD

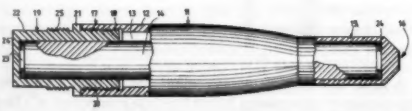
Gilles Bérubé, Loretteville, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Continuation of Ser. No. 87,237, Oct. 22, 1979, abandoned. This application Mar. 11, 1982, Ser. No. 357,288

Claims priority, application Canada, Mar. 1, 1979, 322792

Int. Cl.³ F42B *13/22*

U.S. Cl. 102—529 **6 Claims**



1. A practice warhead for simulating the flight characteristics of an actual warhead, the practice warhead providing a coefficient of drag, weight and maximum cross-sectional area of the practice warhead such that the ballistic coefficient of the practice warhead matches closely that of the actual warhead, the practice warhead comprising a shell of substantially the same external configuration and maximum cross-sectional area as the actual warhead, the shell defining a hollow core, and readily insertable ballast means in the form of a cylindrical metal rod disposed in the core to provide a sufficient weight to match the ballistic coefficient of the actual warhead while maintaining flight stability, the practice warhead being characterised in that the shell is of a suitable plastic material, the cylindrical metal rod being of generally uniform diameter throughout its length, the hollow core of the shell having a forward end portion of substantially the same internal diameter as the outside diameter of the metal rod and within which said metal rod is positioned, the remainder of said hollow core being of greater diameter than said metal rod, said shell including an aft opening of greater diameter than said metal rod for receiving the metal rod within the core, a joint means detachably secured in said aft opening, said joint means being a generally cylindrical member open at one end and having a central hollow bore of the same diameter as said metal rod and within which the aft end of said metal rod is positioned whereby each end portion of the cylindrical metal rod is principally supported adjacent each of its ends and positioned to define an annular space between the metal rod and the core.

4,498,397

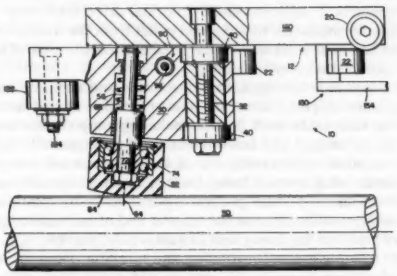
CONVEYOR TRANSFER MECHANISM

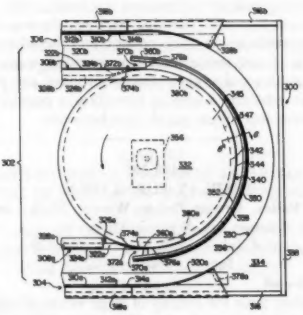
Gilbert Fuchs; Norman Crowley, and Randall Wink, all of Evansville, Ind., assignors to Evans Tool & Engineering Inc., Evansville, Ind.

Filed Aug. 17, 1982, Ser. No. 408,816

Int. Cl.³ B61J *1/02*; B61B *13/12*

U.S. Cl. 104—35 **30 Claims**





1. A transfer mechanism for a conveyor system comprising: a first trackway having a longitudinal axis and a transfer end, said first trackway including an inside track and an outside track which are disposed parallel to one another in a horizontal plane, each said track having a top surface and a lateral surface;

a second trackway having a longitudinal axis and a transfer end located adjacent to the transfer end of said first trackway, said second trackway including an inside track and an outside track which are disposed parallel to one another in a horizontal plane, each said track having a top surface and a lateral surface;

a pallet which is mounted for longitudinal movement on said tracks of said first and said second trackways, said pallet including at least three top rollers mounted for rotation about horizontal axes in engagement with the top surfaces of said inside or outside tracks such that said pallet is vertically supported on said trackway and three lateral rollers mounted for rotation about vertical axes in engagement with the lateral surfaces of said inside or outside tracks such that said pallet is laterally positioned on said trackway, said pallet further including a drive roller having an axial face which is movably mounted to said pallet;

an outside arcuate connecting track means for connecting said outside track of said first and second trackways including an arcuate connecting track having a top surface and a lateral surface which connects the transfer end of said outside track of said first trackway with the adjacent transfer end of said outside track of said second trackway, said arcuate track having a center axis of curvature;

a first drive means for driving said pallet along said first trackway towards said transfer end of said first trackway and a second drive means for driving said pallet along said second trackway away from said transfer end of said second trackway, said first drive means including a first rotating cylindrical drive shaft disposed underneath and parallel to said first trackway and said second drive means including a second rotating cylindrical drive shaft disposed underneath and parallel to said second trackway such that said axial face of said drive roller rotatably contacts an adjacent said cylindrical drive shaft; and

a transfer means for moving said pallet from the transfer end of said first trackway to the adjacent transfer end of said second trackway including

(a) a turntable having an axis of rotation and an inside track portion disposed about the axis of rotation of said turntable, said inside track portion including a top surface and a lateral surface, the axis of rotation of said turntable being coaxial with the center axis of said arcuate track and said inside track portion being located on said turntable such that said inside track portion is positionable by rotation of said turntable adjacent the transfer end of said inside track of said first trackway and of said second trackway;

(b) a rotating means for rotating said turntable about the axis of rotation to cyclically present said inside track portion of said turntable to the transfer end of said inside track of said first trackway and subsequently to the transfer end of said inside track of said second trackway; and

(c) a transition means provided between the top surface of said turntable inside track portion and the adjacent transfer ends of said inside track for providing a gap therebetween at an acute angle to the longitudinal axis of said top surfaces whereby a smooth transition is provided as said respective top rollers move therebetween.

4,498,398

DISPLAY TURNTABLE

Robert G. Vallee, Grosse Pointe Woods, Mich., assignor to George P. Johnson Co., Warren, Mich.

Filed Jul. 7, 1980, Ser. No. 166,320

Int. Cl.³ B60S *13/02*

U.S. Cl. 104—44 **2 Claims**

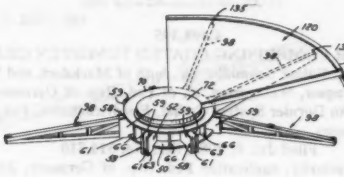
1. A rotating table for display of large heavy products such as vehicles and formed of manually manageable components which are readily assembled and disassembled which comprises:

(a) a central portable stationary horizontal base member,

(b) a rotatable center load bearing unit rotatably mounted on said base member,

(c) radial stanchions circumferentially spaced around and permanently supported on said load bearing unit each having a vertical socket well with an open top,

(d) a plurality of independent outrigger trusses each having a vertical drop-in base bar at the proximal end to insert vertically and fit removably in a socket well, and structural members extending radially outward of said base bar a predetermined distance from said base member, and



(e) a plurality of portable shaped platform elements supported on and secured to said outrigger trusses to form a circular load bearing rotating table supported on said base member,

(f) said shaped platform elements being sector shaped and being formed of a plywood plate, a framework of metal tubes underlying the radial edges of said plate, and a rigid plastic coating of material over side plate and around said tubes to unify the construction.

4,498,399

FREE LINE SWITCH ARRANGEMENT FOR POWER-AND-FREE TROLLEY CONVEYOR

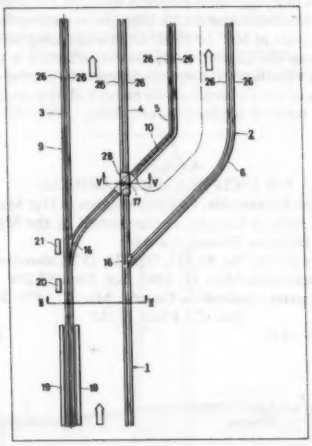
Takao Wakabayashi, Toyonaka, Japan, assignor to Nakanishi Metal Works Co., Ltd., Osaka, Japan

Filed Nov. 24, 1981, Ser. No. 324,598

Claims priority, application Japan, Nov. 28, 1980, 55-172008[U]

Int. Cl.³ E01B *25/26*

U.S. Cl. 104—96 **7 Claims**



1. A free line switch arrangement for a power-and-free trolley conveyor comprising a first free line composed of a first left rail and a first right rail arranged in parallel in a substantially horizontal plane, a second free line composed of a second left rail and a second right rail arranged in parallel in said substantially horizontal plane, each of said rails comprising a pair of channel members closely arranged with their openings opposed to each other, said second free line being joined to said first free line, a first switch rail pivotally moveable in said

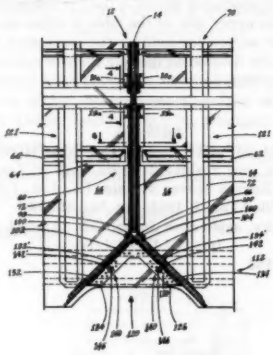
substantially horizontal plane and provided at the junction of said first left rail and said second left rail, a second switch rail pivotally moveable in said substantially horizontal plane and provided at the junction of said first right rail and said second right rail, and a crossing switch rail pivotally moveable in said substantially horizontal plane and provided in a cut out portion in the rails at the position where one of said first rails crosses one of said second rails; one channel member of each of the first free line rails being partly cut out at each of said junctions of the first free line rails and the second free line rails, one channel member of each of the second free line rails being continuous with one of the cut out ends of said one channel member of the first free line rails, the other channel member of each of the second free line rails extending to a location close to the other cut out end, each of said first and second switch rails being pivotably suspended at its one end from a rail suspending frame at a location close to the ends of the two inner channel members included in the four channel members of the two rails at the junction, the free other end of each of the switch rails being selectively connectable to said one cut out end of said one channel member of the first free line rail or to the other channel member of the same first free line rail.

4,498,400

HOPPER SLOPE SHEET SUPPORT AND CONNECTING MEANS

Frederick E. Vorwerk, St. Peters, and James D. Mundloch, Florissant, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,744
Int. Cl.³ B61D *5/02, 7/02, 49/00*
U.S. Cl. 105—248 **9 Claims**



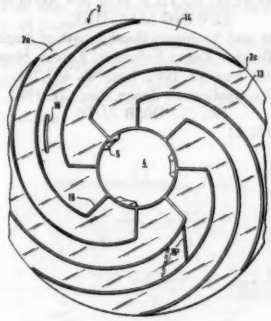
1. A hopper slope sheet to side sill connection comprising: metal plates located on each side of a filament wound railway hopper car body; said plates connecting transversely extending hopper slope sheets to car body sides and longitudinally extending side sills; said plates being generally "U" shaped and including legs which extend downwardly from a joint between the transverse bulkheads and the slope sheets downwardly along each of the slope sheets; said plates being connected to the car body sides, and to the side sill with mechanical fasteners; said plate including flange portions extending inwardly from the car body sides containing openings to receive transversely extending slope sheet reinforcements.

4,498,401

ARTICLE DISPLAY STAND

Wolf-Dietrich Hannecke, Rischenau Weg 6, 3410 Northeim, Fed. Rep. of Germany

Continuation of Ser. No. 821,410, Aug. 3, 1977,. This application Oct. 28, 1981, Ser. No. 315,987
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 7706489[U]; Mar. 3, 1977, 7706490[U]; Mar. 4, 1977, 7706706[U]
The portion of the term of this patent subsequent to Sep. 21, 1996, has been disclaimed.
Int. Cl.³ A47B *57/00*
U.S. Cl. 108—60 **7 Claims**



1. An article display stand, comprising an elongated upright support having a plurality of recesses which are spaced from and located adjacent to each other in the direction of elongation of said support; and an article supporting element mountable in said support in any of a plurality of positions spaced longitudinally of said support and having a periphery and projection which is detachably engageable with respective ones of said recesses so that, when said projection of said support element engages in one of said recesses of said support, said article supporting element is fixed in a respective one of said positions, said article supporting element having a circular base plate with a periphery and a central opening for extension of said support and also having a plurality of substantially upright walls located on an upper surface of said base plate and forming a plurality of compartments each of which has an outer opening at the periphery of said base plate, the walls bounding each of said compartments having inner ends and also having portions extending over a greater part of a length of the wall, from said inner ends of the walls to said outer opening of the respective compartment and being continuously smoothly curved from said inner ends of said walls to said outer opening of the respective compartment so as to provide a continuous slight bending of articles supported in said compartments and to thereby improve stiffness and reliable standing of the articles in a vertical position.

4,498,402

METHOD OF REDUCING HIGH TEMPERATURE SLAGGING IN FURNACES AND CONDITIONER FOR USE THEREIN

Alfred E. Kober, 81 Claire Dr., Bridgewater, N.J. 08807, and Christopher J. Macey, 720 Pearl St., Elizabeth, N.J. 07202

Filed Jun. 13, 1983, Ser. No. 503,727
Int. Cl.³ F23J *11/00*
U.S. Cl. 110—345 **15 Claims**

1. A method of ameliorating high-temperature slagging conditions which result from impaction on the boiler interior surfaces of molten or semi-molten ash particles in flue gas resulting from the combustion of coal, which method comprises

(a) at or upstream of the high-temperature region in said

boiler system where slagging tends to occur, adding to said flue gas a conditioner selected from the group consisting of strontium carbonate, a mixture of zircon with copper oxychloride, a mixture of alumina with aluminum fluoride, zircon or zirconyl chloride, and a mixture of hydrated aluminum silicate, unexpanded perlite ore, unexpanded vermiculite ore or strontium carbonate with copper oxychloride, zircon, or zirconyl chloride; and

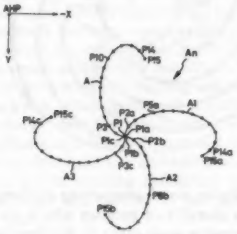
(b) thereafter causing said mixed flue gas and conditioner to flow through said region.

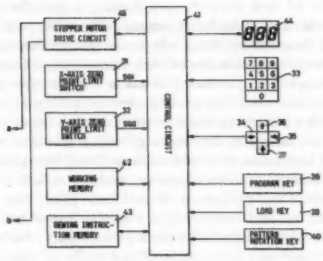
4,498,403

PROGRAMMING DEVICE FOR AN AUTOMATIC SEWING MACHINE

Toshiaki Yanagi, and Yoshinori Bessho, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 13, 1982, Ser. No. 407,799
Claims priority, application Japan, Aug. 31, 1981, 56-136746
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **6 Claims**





1. A programming device for an automatic sewing machine wherein a succession of stitches defining a stitch pattern are formed through relative movements between a needle and a work holder according to a batch of sewing instructions, said programming device comprising;

memory means for storing said batch of sewing instructions prepared for forming said stitch pattern;

manual setting means for setting a desired number of angular divisions of a plane about a preset coordinate point into equal angles, said preset coordinate point being defined by a first sewing instruction stored in said memory means;

first control means for preparing, based on said batch of sewing instructions and said desired number of angular divisions, another batch of sewing instructions for forming said stitch pattern at a plural number of positions corresponding to said desired number of angular divisions, said plural number of positions being circumferentially spaced about said preset coordinate point in every degrees of said equal angles; and

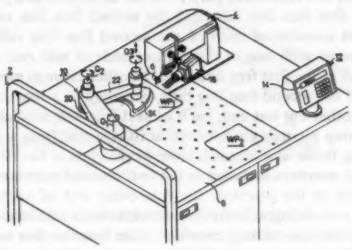
second control means for storing said another batch of sewing instructions in said memory means.

4,498,404

AUTOMATIC SEWING APPARATUS

Yaacov Sadeh, Beersheva, Israel, assignor to Beta Engineering & Development Ltd., Beer Sheva, Israel

Filed Sep. 15, 1982, Ser. No. 418,389
Claims priority, application Israel, Jul. 23, 1982, 66381
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **5 Claims**



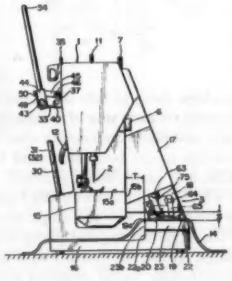
1. Sewing apparatus including a main frame, a sewing head mounted thereon, a horizontal table carried by said main frame for receiving a workpiece to be sewn, and a manipulator for manipulating the workpiece on the table with respect to the sewing head; characterized in that said manipulator includes a first arm rotatably mounted to said main frame about a first vertical axis, a second arm rotatably mounted to said first arm about a second vertical axis, a manipulatable head rotatably mounted to said second arm about a third vertical axis, said manipulator head being a suction head and including means for selectively applying a negative fluid pressure to its interior in order to pick up and release the workpiece, and rotary drive means for rotating said first and second arms and said manipulator head about their respective first, second and third vertical axes, said horizontal table being formed with a plurality of apertures therethrough and including means for selectively applying either positive or negative fluid pressure through said apertures to the upper face of the table in order to selectively produce either suction for holding the workpiece thereto, or an air cushion for facilitating moving the workpiece thereover by said manipulator.

4,498,405

DUAL-FUNCTION SEWING MACHINE

Susumu Hanyu, and Yoshikazu Ebata, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1983, Ser. No. 464,741
Claims priority, application Japan, Feb. 12, 1982, 57-19541
Int. Cl.³ D05B *1/14*
U.S. Cl. 112—168 **7 Claims**



1. A double functioning sewing machine, comprising:

a base having an upper side and a rear end portion and being partly formed with a hollow frame having a top and a rear side;

a machine frame having a top, a one side, a bracket, an arm, and a front side formed with a recess, said machine frame being formed so as to rise from said rear end portion of said base to said top from which said arm laterally extends and overhangs said base and terminates into said bracket;

a lock stitch mechanism provided in said machine frame and including an operatively connected lock stitching needle bar with a needle, said lock stitching needle bar with said needle being supported by said bracket of said arm of said machine frame;

a free arm having a bottom face and a front side and disposed rearwardly on said one side of said machine frame and extending between said arm and said base;

an overlock stitch mechanism provided in said machine frame and including an overlock stitching needle bar with a needle, a presser bar with a presser foot, all being disposed in said recess of said front side of said machine frame adjacent said one side where said free arm is provided;

a loop taker driver provided in said free arm;

a loop taker provided in said free arm and driven by said loop taker driver to cooperate with said lock stitching needle bar with said needle supported by said bracket so as to produce lock stitches;

a fabric feed device disposed in said hollow frame of said base;

a looper mechanism disposed in said hollow frame of said base, said looper mechanism and said fabric feed device cooperating with said overlock stitching needle to produce overlock stitches; and

an overlock stitch working surface disposed at said top of said hollow frame and being at a level slightly lower than said bottom face of said free arm and slightly extending from said one side of said machine frame and being parallel with said free arm so that a path is defined by said rear side of said hollow frame, said front side of said free arm, said upper side of said base, and said bottom face of said free arm for guiding a fabric towards said rear end portion of said base as the fabric is transported by said fabric feed device during overlock stitching operation.

4,498,406

SEWING MACHINE LUBRICATION SYSTEM

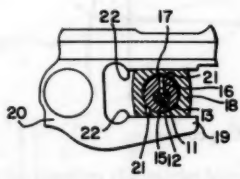
Wolf R. Von Hagen, Hemmingen, Fed. Rep. of Germany, assignor to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,529

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211893

Int. Cl.³ D05B *71/00*

U.S. Cl. 112—256 **9 Claims**



1. A sewing machine lubrication system comprising:

a revoluble crankshaft provided with lubricant conducting means, said crankshaft includes at least one eccentric rotary actuating element having a peripheral bearing surface and an axis about which the eccentric element rotates;

lubricant conducting bore means radially extending from the lubricant conducting means of said crankshaft and reaching to a location on the bearing surface of said eccentric rotary actuating element spaced substantially the farthest distance from the axis of rotation of said eccentric actuating element; and

lubricant reservoir means provided on the bearing surface of said eccentric rotary actuating element over an area intersected by said radial lubricant conducting bore means.

4,498,407

SEWING MACHINE WORK PIECE TURNING DEVICE

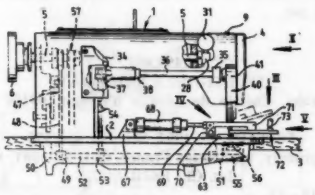
Günter Landwehr, Bielefeld, and Horst Meyer, Bad Salzuflen, both of Fed. Rep. of Germany, assignors to Koch Adler AG, Fed. Rep. of Germany

Filed May 4, 1983, Ser. No. 491,266

Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3216995; Sep. 23, 1982, 8226771[U]

Int. Cl.³ D05B *35/10, 39/00*

U.S. Cl. 112—308 **15 Claims**



1. A sewing machine having a sewing station with at least a needle and a presser foot, means including a four motion feeding dog for feeding a workpiece past said sewing station, a supporting plate positioned near said needle and having a guide edge for orienting said workpiece relative to said needle, turning means comprising an air chamber positioned above said work piece for turning said workpiece about an axis coinciding with the needle, a plurality of air nozzles leading from said air chamber for directing air jets from said nozzles in a spaced manner which is tangentially directed with respect to said needle and in an accutely angled manner toward said support plate, and means for pivotally moving said air chamber toward and away from said workpiece.

4,498,408

LIFTING BODY FOR DIVING

Sven I. Otteblad, Partille, and Ralph G. Dovertie, Gothenburg, both of Sweden, assignors to Aquastat AB, Gothenburg, Sweden

Filed Jul. 16, 1982, Ser. No. 398,884

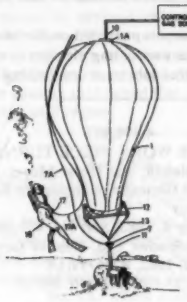
Claims priority, application Sweden, Jul. 17, 1981, 8104428

Int. Cl.³ B63C *7/10*

U.S. Cl. 114—52 **30 Claims**

1. Lifting body for transporting, raising or lowering objects under water, provided with means for supplying and removing a lifting gas, and being of the type in which the lifting gas has essentially the same pressure as the surrounding mass of water, and which includes a first measuring means comprising one of a pressure meter and an echo-sounder for providing a depth position signal, characterized in that the depth position signal is arranged to be compared with a preset desired depth signal to regulate the means for supplying and removing the lifting gas, and the lifting body is provided with a second measuring means for providing an acceleration signal, which is coupled to the lifting gas supply means, and a lifting implement for attachment to an object to be raised, said second measuring means comprising a dynamometer arranged in a lifting means to measure the force in the lifting means, wherein the acceleration signal is coupled to a high-pass filter, the output signal of

which is arranged to be compared with a signal derived from the depth position signal and the desired depth signal, to generate a control signal for the means for supplying and removing the lifting gas.

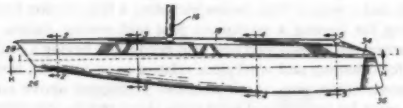


4,498,409

MULTI-HULL SAILBOAT

Maurice Edel, Chemin du Moulin d'Amont, 69150 Decines, France

Filed Oct. 15, 1982, Ser. No. 434,556
Claims priority, application France, Oct. 15, 1981, 81 19634
Int. Cl.³ B63B *1/12*
U.S. Cl. 114—61 **6 Claims**



1. A hull for a multi-hull sailcraft, the hull being streamlined and including a bow section, a mid-hull section, and a stern section, the bow section and the fore of the mid-hull section having shallow draft and having a wide cross-section in order to provide maximum buoyancy, the stern section and the aft of the mid-hull section having a gradually deepening draft and a gradually narrowing V-shaped cross-section relative to the fore section of the mid-hull such that the aft of the mid-hull and the stern function as a leeboard, and the center of buoyancy tends to move forward as the hull is immersed deeper in water.

4,498,410

ELECTIVELY DETACHABLY COUPLED BALL JOINT AND PIVOT CUP COMBINATION FOR A WIND-PROPELLED SURFBOARD

James D. Budge, 1031 16th St., Santa Monica, Calif. 90403

Filed Jul. 28, 1982, Ser. No. 402,649
Int. Cl.³ B63B *15/00*
U.S. Cl. 114—91 **4 Claims**

1. An electively detachably coupled ball joint and pivot cup combination for electively detachably coupling a mast to a surfboard, said electively detachably coupled ball joint and pivot cup combination comprising:

a. a pivot cup which is pivotally and rotationally coupled to the surfboard;

b. an annular plate which is disposed on and mechanically coupled to the peripheral edge of the opening of said pivot cup;

c. a spherical member which has been cut into a plurality of sections which are loosely coupled to each other so that said plurality of sections of said spherical member may be either inserted into or removed from said pivot cup through said annular plate, with each of said plurality of sections of said spherical member being loosely coupled to the mast;

d. a sleeve into which the mast is inserted and which is slidably coupled to the mast; and

e. resiliently biasing means for resiliently biasing said sleeve against said plurality of sections of said spherical member so that said plurality of sections of said spherical member

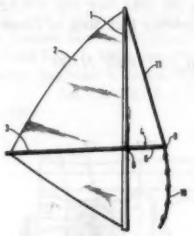
are resiliently biased against said annular plate and are secured in said pivot cup whereby the application of a force overcoming the resiliently biasing force of said resiliently biasing means moves said sleeve away from said plurality of sections of said spherical member thereby enabling said plurality of sections of said spherical member to move closer together in order to release said spherical member from said pivot cup.

4,498,411

SAILBOARD RIG AND BOOM

Frank P. Marker, Garmisch-Partenkirchen, Fed. Rep. of Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Fed. Rep. of Germany

Filed Apr. 28, 1982, Ser. No. 372,565
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117312
Int. Cl.³ B63H *9/10*
U.S. Cl. 114—97 **6 Claims**



1. A sailboard rig comprising:

a mast;

a boom positioned substantially perpendicular to the mast;

a rigid extension member pivotably connected to the boom, said rigid extension being pivotable to an operative position wherein said rigid extension member extends in the plane of and a substantial distance from the boom;

stopping means for stopping the pivotable movement of the rigid extension member when in the operative position in the plane of the boom; and

spring means for pivotably biasing the rigid extension mem-

ber away from the plane of the boom to an inoperative position,

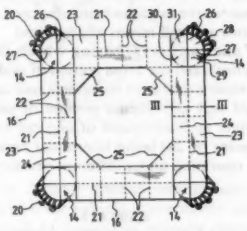
whereby said rigid extension member can be moved from the inoperative position to the operative position in the plane of the boom to aid in turning a sail from a position parallel to the surface of the water to a position perpendicular to the surface of the water to facilitate removal of the sail from the water.

4,498,412

OFFSHORE PLATFORM

Hadar Lidén, Västra Frölunda, Sweden, assignor to Götaverken Arendal AB, Sweden

Filed Jun. 2, 1983, Ser. No. 500,308
Claims priority, application Sweden, Jun. 8, 1982, 8203536
Int. Cl.³ B63B *35/44*
U.S. Cl. 114—264 **3 Claims**



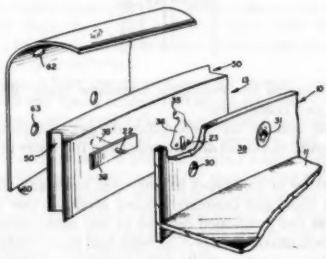
1. An offshore platform of the kind comprising an operating deck carried by four cylindrical columns supported by submerged pontoons, which said pontoons include four box structures having a substantially four-sided cross-section and formed into a symmetrical, square ring where each of said pontoon box structures is subdivided into two compartments by a longitudinal center line bulkhead, and a portion of the outward shell of each column is extended downwardly to form a rounded corner in the square ring, the columns lack external interconnection, and each of said columns is subdivided by cruciform, vertical bulkheads forming extensions of said longitudinal centerline bulkheads in the adjacent pontoon box structures.

4,498,413

CONSTRUCTION OF RIGID HULL INFLATABLE BOAT

William H. Cochran, 72 Water St., P.O. Box 32, Stonington, Conn. 06378

Filed Mar. 16, 1983, Ser. No. 475,768
Int. Cl.³ B63B *7/00*
U.S. Cl. 114—345 **14 Claims**



8. In combination with a rigid hull portion of a boat:

a plurality of inflatable bladders, positioned to generally define a ring around and generally at, or above, the water level of the hull, and including valve means associated with each bladder; and

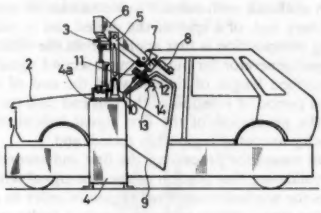
a shroud of flexible material surrounding at least some of said bladders, said shroud having first and second end portions thereof, both end portions operatively connected to the rigid hull portion at approximately the same point, so that said shroud completely circumferentially surrounds at least some of said bladders when they are inflated and extends outwardly from said rigid hull portion.

4,498,414

VEHICLE BODY PAINTING ROBOT

Hiroshi Kiba, Hiroshima; Yoshimasa Itoh, Yokohama, and Kiyuji Kiryu, Kawasaki, all of Japan, assignors to Mazda Motor Corporation, Hiroshima and Tokico Ltd., Kawasaki, both of, Japan

Filed Nov. 29, 1982, Ser. No. 445,153
Claims priority, application Japan, Nov. 30, 1981, 56-193397
Int. Cl.³ B05B *13/02*
U.S. Cl. 118—663 **11 Claims**



1. A robot for coating a paint on a vehicle body which is transferred along a conveyor line, said robot comprising:

(a) an arm supported on a pedestal rotatably in both horizontal and vertical planes;

(b) a rotary actuator supported at the fore end of said arm;

(c) a paint applicator supported on the output shaft of said rotary actuator for spraying a paint toward said vehicle body; and

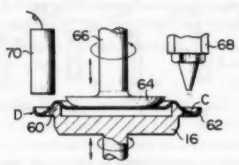
(d) a door handler supported on the output shaft of said rotary actuator and engagable with the door of said vehicle body to open or close said door.

4,498,415

DETECTION OF IMPROPER COATING OF SEALING COMPOSITION ON CAN END DISKS

Toshiharu Tsuchiya, Susono, and Mamoru Iwata, Oyama, both of Japan, assignors to Shinryo Seikan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1983, Ser. No. 545,357
Claims priority, application Japan, Nov. 19, 1982, 57-202028
Int. Cl.³ B05C *3/02*; B05B *13/06*
U.S. Cl. 118—712 **3 Claims**



1. In apparatus for applying a coat of a sealing composition on annular, curled rims of can end disks, including a rotary rest for holding thereon one can end disk at a time for joint rotation therewith, and a nozzle supported in a first preassigned angular

position over the curled rim of the can end disk on the rest for dispensing each predetermined quantity of the sealing composition, each can end disk having its curled rim coated with the sealing composition from the nozzle while being rotated a prescribed number of revolutions on the rest, a system for detecting the improper coating of the sealing composition on the curled rims of the can end disks, the detecting system comprising:

(a) a photodetector disposed in a second preassigned angular position over the curled rim of the can end disk on the rest for detecting uncoated regions on the curled rim of the can end disk on the rest while the can end disk is in rotation with the rest and is being coated with the sealing composition from the nozzle, the photodetector putting out a first signal indicative of uncoated regions on the curled rim of the can end disk, the uncoated regions detected by the photodetector including both faulty and nonfaulty uncoated regions, a nonfaulty uncoated region being one which is not yet coated with the sealing composition, a said first signal indicative of a nonfaulty uncoated region being generated during the passage relative to the photodetector of a peripheral region of the curled rim which is ahead, with respect to a direction of rotation of the rotary rest, of a spot of the curled rim to which the sealing composition is first applied from the nozzle;

(b) a signal generator for putting out a second signal during a prescribed length of time toward the end of the prescribed period of rotation of the can end disk on the rest after the generation of the first signal indicative of the nonfaulty uncoated region has ended; and

(c) circuit means for processing the first and second signals for invalidating that portion of the first signal which represents the nonfaulty uncoated region in order to obtain a rejection signal which represents only a faulty uncoated region, if any, on the curled rim of the can end disk on the rest, said circuit means comprising an AND gate having input terminals receiving said first and second signals from said photodetector and said signal generator, respectively, said AND gate generating the rejection signal only when it receives concurrently the second signal and the first signal indicative of a faulty uncoated region.

4,498,416

INSTALLATION FOR TREATMENT OF MATERIALS FOR THE PRODUCTION OF SEMI-CONDUCTORS

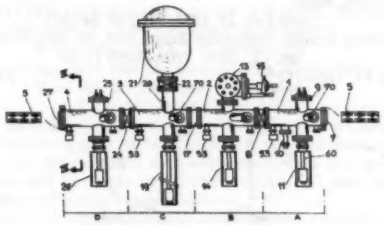
Pierre Bouchaib, L'Etang la Ville, France, assignor to Instrument S.A., Paris, France

Continuation of Ser. No. 339,590, Jan. 15, 1982, abandoned. This application Nov. 2, 1983, Ser. No. 547,463

Claims priority, application France, Jan. 27, 1981, 81 01486

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—719 **1 Claim**



1. An installation comprising a series of modules for the sequential treatment, in vacuum chambers, of materials for the production of semi-conductors from slices of crystalline metarials, said slices being carried in complete batches by carriers (5) moved seriatim through said installation, and further comprising at least one airtight door (7) for introduction of said carriers into a first of said modules and at least one airtight door (27) for removal of said carriers from a last of said module, each of said modules comprising

(a) a straight, cylindrical tubular portion (1, 2, 3, 4) comprising rail means (47) parallel with the axis of the latter;

(b) a treatment chamber laterally offset from said tubular portion;

(c) means (61, 63) operated from the exterior of said module for manipulating the individual slices in said carrier and a said treatment means in a given module, and between different locations of said carrier, said means comprising a transfer bar (60) terminating in a circular plate (61) carrying a plurality of curved plates (63) with recess means (64) for selectively engaging a portion of a support (31) for a said slice to enable removal of said slice from said carrier;

(d) endless chain means (50, 51, 52) operated from the exterior of said modules for moving a said carrier along said rail means (47), said chain means carrying regularly spaced lugs having lateral projections which contact abutments (55) on said carrier surrounding said chain means, successive modules being disposed with their tubular portions and rail means aligned; and

(e) each of said carriers (5) having wheels (36), the position of said wheels and the cross section of said rail means (47) being so determined as to maintain a said carrier (5) on one portion of said rail when a portion of said carrier (5) is passing over an interruption of said rail means (47)

(f) valve means (8, 24) being interposed between successive modules operating under different pressures.

4,498,417

SUPPLY APPARATUS FOR THE ENRICHMENT OF AQUARIUM WATER WITH CO_2-GAS

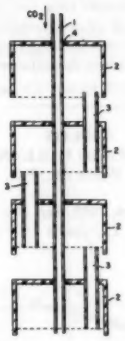
Arno Richter, Belm, Fed. Rep. of Germany, assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 28, 1983, Ser. No. 508,684

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224149

Int. Cl.³ A01K *63/04*

U.S. Cl. 119—5 **6 Claims**



1. Apparatus for enriching aquarium water with carbon dioxide gas, comprising:

an inlet conduit for carbon dioxide gas, said conduit being adapted to extend downwardly into the water of an aquarium;

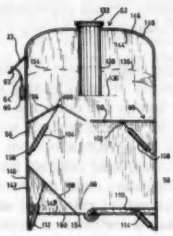
a plurality of containers having open bases and closed sides and tops, said containers being arranged one above the other and positioned relative to said inlet conduit so that carbon dioxide gas issuing from said inlet conduit collects within and substantially fills a lower one of said containers to establish a first gas/water interface, said gas then overflowing said lower one of said containers to be collected within a higher container to establish a second gas/water interface; and

an overflow conduit fitted through the wall of said lower one of said containers, the lower end of said overflow conduit extending to said first gas/water interface and the upper end of said overflow conduit extending to said second gas/water interface.

4,498,418
CATTLE CAR

Claude Chumley, P.O. Box 213, Harrogate, Tenn. 37752

Filed Nov. 8, 1982, Ser. No. 439,790
Int. Cl.³ B60P *3/04*; B61D *3/04*
U.S. Cl. 119—10 **12 Claims**



1. A vehicle for the long distance and humane transporting of livestock in which the vehicle is alternately suitable for the transporting of bulk particulate or granular matter, as well as other cargo comprising:

a substantially rectangular shaped support platform including wheel means to allow movement of said support platform over a selected route and having a long dimension and a short dimension thereby defining a selected perimeter;

an enclosing structure for housing livestock having a pair of side walls, a pair of end walls and a top wherein said side walls and end walls define a base with substantially the same shape as said selected perimeter, and which base joins to said support platform in a manner suitable for maintaining a closed environment, said enclosing structure defining at least one entryway to the interior of said enclosing structure, and a multiplicity of apertures for selectively providing light and ventilation to the interior of said enclosing structure, said enclosing structure further including means for closing said entryway and said multiplicity of apertures in a manner suitable for maintaining said closed environment;

a lower support floor located above said support platform, said lower support floor having a lower first half and a lower second half, each of said lower first and second halves including an interior edge supported by said support platform between said pair of side walls such that upon rotation of said first and second halves of said lower support floor about said interior edges, both first and second halves of said lower support floor slope toward the center of said enclosure;

lower support floor power actuators for rotating said lower first half and lower second half about said interior edges;

auger means supported below and parallel to said lower support floor and further located between said interior edge of said lower first half and interior edge of said lower second half, said auger means for transporting particulate or granular material to a selected location in said vehicle;

an environmental system for maintaining the temperature and other environmental parameters within said enclosed environment at preselected levels;

a multiplicity of open containers secured to said side walls which allow free access by said livestock to feed and water contained in said open containers;

first and second storage containers for storing food and water respectively;

means for providing feed to selected ones of said multiplicity of open containers from said first storage container;

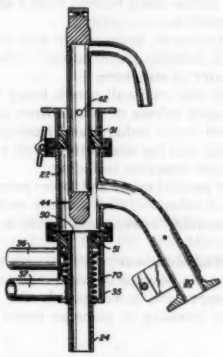
means for providing water to other selected ones of said multiplicity of open containers from said second storage container; and

master control means for controlling said environmental system, said means for providing feed, and said means for providing water.

4,498,419
BACKWASH VALVE AND SYSTEM FOR TEAT CUP ASSEMBLY

Andrew J. Flocchini, 7050 Lakeville Hwy., Petaluma, Calif. 94952

Filed Oct. 18, 1982, Ser. No. 434,979
Int. Cl.³ A01J *7/00*
U.S. Cl. 119—14.18 **5 Claims**



1. A backwash valve for use between a teat cup assembly and a milk manifold comprising:

a main valve body defining a central valve chamber and including a main inlet, a main outlet and a valve seat along a fluid path between said main inlet and said main outlet, said main inlet fluidly connected to the teat cup assembly and the main outlet fluidly connected to the milk manifold; and

a valve head member movably mounted to the main valve body for movement between a first, milking position and a second, backwash position, said valve head member including:

a valve surface sized for mating engagement with said valve seat when said valve head member is in said second position thereby sealing said main outlet from said main inlet;

a head inlet; and

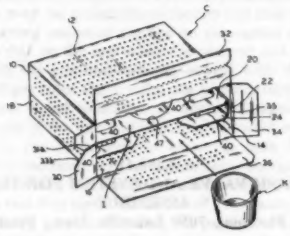
a head outlet fluidly connected to said head inlet, said head outlet disposed along said valve head member so to fluidly communicate with said central valve chamber when said valve head member is in said second, backwash position and to fluidly isolate said head outlet from said central valve chamber when said valve head member is in said first, milking position;

whereby said backwash valve allows the teat cup assembly to be backwashed between animals without disassembly of the teat cup assembly from the milk manifold.

4,498,420
CARTON FOR INSECTS

D. L. Botterman; N. A. Wolff, and H. T. Ver Planck, all of Arlington, Tex., assignors to Container Corporation of America, Chicago, Ill.

Filed Jan. 23, 1984, Ser. No. 572,870
Int. Cl.[3] A01K *1/00*; B65D *5/48*
U.S. Cl. 119—15 2 Claims



1. A carton for hatching, holding, feeding, and releasing insects, said carton being formed from a unitary blank of foldable paperboard and comprising:

(a) pairs of apertured, opposed top and bottom, side, and end wall panels foldably joined to each other to form a vented box-like external structure;

(b) certain of said end wall panels being readily openable to facilitate quick release of insects from said carton;

(c) an internal insect holding and feeding structure disposed intermediate said top and bottom wall panels;

(d) said internal structure including:

(i) a pair of parallel upper and lower panels spaced vertically from each other and from said top and bottom wall panels and extending between and connected to said side wall panels;

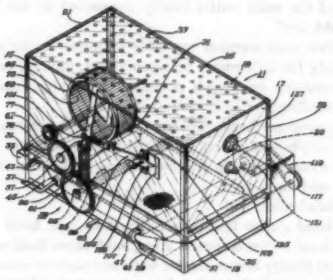
(ii) said upper and lower panels presenting apertures accommodating the passage of insects therethrough;

(iii) said upper and lower panels also presenting aligned holes for retaining in place an insect food holding container.

4,498,421
SELF-CLEANING CAGE

Robert O. Lovitt, Katy, Tex., assignor to Michael Douglas Fredrick, Houston, Tex.

Filed Jul. 19, 1982, Ser. No. 399,832
Int. Cl.[3] A01K *1/03, 1/01*
U.S. Cl. 119—17 7 Claims



1. In a cage for small animals or the like having a perforated bottom to allow waste to be dropped by gravity exteriorly of the cage, a continuous periphery of walls extending upwardly from the bottom, at least one of the walls affording a view of the interior of the cage, at least one of the walls adapted at the top thereof to engage a member to form a lid; the improvement comprising:

a. a continuous closed-loop belt with a portion traversing underneath the perforated bottom to catch the wastes dropped therethrough; said belt traversing over a plurality of rollers beneath said portion and constraining said belt to pass contiguously to a scraper and interiorly of a cleaning pan for cleaning;

b. said scraper and waste collector disposed adjacent said belt upstream of said pan so as to scrape the wastes from the top surface of said belt before it traverses said cleaning pan;

c. said cleaning pan disposed downstream of said scraper and adapted to receive liquids condensed on and falling from said belt, said cleaning pan having a drain for draining off said liquids;

d. steam cleaning passageways traversing laterally across said belt interiorly of said cleaning pan for cleaning said belt such that liquids will collect in said cleaning pan; and

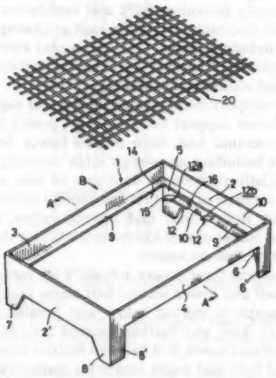
e. motive means for moving said belt such that its top surface passes beneath the perforate bottom, contiguously to said scraper and through said cleaning pan adjacent said steam cleaning passageways; said motive means including an animal-powered wheel suspended accessible to said animal and journalled for rotation responsive to locomotion of said animal and transducing means for translating said rotation of said wheel into movement of said belt;

said wheel having a ratchet to constrain rotation to a single direction and said transducing means including first and second co-engaging gears and a third gear and connected belt engaging means and moving said belt responsive to rotation of said third gear; said third gear being movable to engage said second gear for movement of said belt and to disengage from said second gear to prevent movement of said belt responsive to locomotion of said animal in said wheel.

4,498,422
BOTTOM BOX FOR PET CAGE

Teho Sou, 7-18 Higashiimazato 2-chome, Higashinari-ku, Osaka, Japan

Filed Oct. 31, 1983, Ser. No. 547,445
Int. Cl.[3] A01K *31/06*
U.S. Cl. 119—17 2 Claims



1. A bottom structure for underlying a pet cage comprising an integral plastic molding including a rectangular body having side walls, a front wall, and a back wall and being vertically open, a shelf on said side walls and at least said back wall and spaced down from the top of said walls, said shelf being perpendicular to the respective walls and leaving an open center section, said shelf being adapted to support a sheet of wire or

the like, said walls being of limited vertical extent, leg means adjacent the intersections of said walls for supporting said walls above a supporting surface, said side walls depending below both said front and rear walls, each of said side walls having a plurality of inward protuberances thereon spaced below said shelf, and a rectangular refuse receptacle open only at its top, said refuse receptacle having lateral flange means at its upper extremity received on said protuberances and below said shelf and a sheet of wire net or the like supported on said shelf, one protuberance on each side wall being relatively adjacent the front wall and having a ramp portion running up from relatively towardly the front wall to relatively towards the rear wall and joining a further portion substantially parallel to said shelf, and a second protuberance on each sidewall farther from the front wall than said one protuberance having only a ramp portion, the upper extremities of both of said protuberances being spaced from said shelf substantially the thickness of said flange means to support said flange means substantially against said shelf.

4,498,423

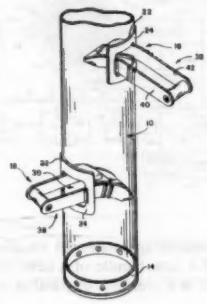
BIRD FEEDER

Leon Gainsboro, Wayland, Mass., and Peter A. Latham, Rye, N.H., assignors to OPUS, Inc., Framingham, Mass.

Filed Jan. 4, 1983, Ser. No. 455,601

Int. Cl.³ A01K *39/01*

U.S. Cl. 119—51 R **13 Claims**



1. A bird feeder having an adjustable perch comprising:
a housing to contain bird feed, the housing having an opening through which a bird may feed;
a perch;
means for supporting the perch, said means being adjustable to vary the horizontal spacing of the perch with respect to the feeding opening;
said perch support being constructed and arranged so that the perch is located in a lower position when the perch support is in a more outwardly extended position.

4,498,424

ANIMAL FEEDING METHOD AND APPARATUS

Peter Leuschner, Emsbüren, Fed. Rep. of Germany, assignor to Hölscher & Leuschner GmbH & Co., Emsbüren, Fed. Rep. of Germany

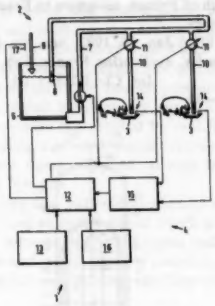
Filed May 6, 1983, Ser. No. 492,082

Claims priority, application Fed. Rep. of Germany, May 15, 1982, 3218438

Int. Cl.³ A01K *5/02*

U.S. Cl. 119—51 R **16 Claims**

1. Animal feeding apparatus comprising a feeding trough from which animals eat, supply means for supplying animal feed to said trough, measuring means on said trough for measuring the rate at which the animals eat the animal feed from said trough such that said measured eating rate is indicative of the behavior value of the animals, and control means operable in response to said measured rate to control the amount of feed subsequently supplied to said trough based on said prior measured rate such that the animal's own behavior thereby determines the amount of feed supplied to said trough.



4,498,425

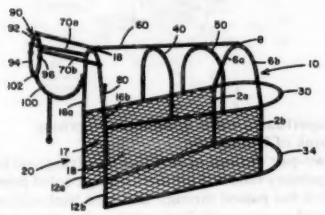
ANIMAL RESTRAINER

Robert D. Aanestad, Rte. 1, Box 189, Isle, Minn. 56342

Filed Jan. 9, 1984, Ser. No. 569,200

Int. Cl.³ A01K *15/04*

U.S. Cl. 119—96 **6 Claims**



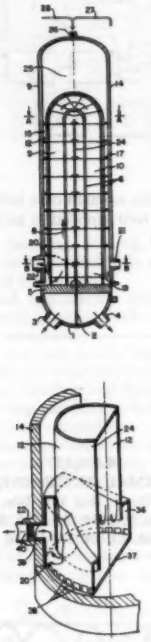
1. A portable apparatus for catching and restraining a small animal comprising:
(a) a first set of at least two U-shaped rods of similar shape and parallel to each other with open ends extending downward;
(b) a second set of at least two U-shaped rods of similar shape and parallel to each other, perpendicular to said first set of U-shaped rods with open ends extending in a first direction, said second set being fastened to said first set; whereas said ends of second set being fastened to one of said outermost rods of said first set;
(c) a support rod attached to the closed ends of said first set of U-shaped rods and extending beyond said first set in said first direction; and
(d) head restraining means for capturing the head of said animal, attached to said support rod at said extension in said first direction beyond said open ends of said second set.

4,498,426

SUPERHEATED STEAM GENERATOR COMPRISING BANK OF U-TUBES

Jean-Luc Leroy, Gif-sur-Yvette, and Pol Dejeux, Nogent-sur-Marne, both of France, assignors to Framatome & Cie, Courbevoie, France

Filed Jan. 26, 1983, Ser. No. 461,065
Claims priority, application France, Feb. 4, 1982, 82 01784
Int. Cl.³ F22B *1/06*
U.S. Cl. 122—32 **3 Claims**



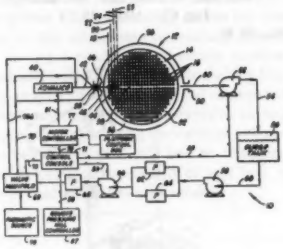
1. A superheated steam generator comprising
(a) a bank of U-tubes (6);
(b) a two-part channel head (1) for supplying said tubes with hot primary fluid and for discharging cooled primary fluid after it has passed through said tube bank and come into thermal contact with feed water to be vaporized;
(c) a secondary casing (14) enclosing said feed water;
(d) a tube plate (5) in which said tubes (6) of said tube bank are fixed and which is fastened to (i) said channel head (1) at its inlet face with which the ends of the tubes are flush, and to (ii) said secondary casing (14) at its outlet face through which said bank of tubes passes; and
(e) a casing (12) enclosing said bank of tubes and disposed inside said secondary casing (14) so as to form in conjunction with the latter an annular space (15) into which a primary water inlet connection (21) leads on the outlet or cold branch (10) side of said bank of tubes, said tube bank casing (12) having at least one opening (19) above said tube plate (5) for the passage of said feed water into the interior of said tube bank casing (12) in order to bring said feed water into contact with said cold branch (10);
(f) a separating partition (24) disposed between said cold branch (10) and a hot branch (9) of said tube bank through which the primary fluid passes out, thus enabling said feed water and then steam to be guided along said tube bank;
(g) a superheated steam recuperator (20) disposed in the proximity of the end of said hot branch (9) which passes through said tube plate (5), for the purpose of evacuating the superheated steam through a pipe connection (22) leading into said annular space (15);
(h) a free space (25) being provided inside said secondary casing (14) above said tube bank casing (12) which is completely closed at its upper part, in order to form a reserve of at least 20 tons of feed water for a thermal power of the steam generator of 1000 MW, this power being defined on the basis of the inlet temperature, the outlet temperature and the flow of primary fluid, said free space being in communication with said annular space (15) and with at least one means (26) of supplying water at a temperature lower than the temperature of the primary fluid to keep said free space continuously full of feed water during normal operation of the steam generator.

4,498,427

SLUDGE LANCE WITH MULTIPLE NOZZLE JET HEAD

Bradley L. Todd, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 21, 1983, Ser. No. 477,181
Int. Cl.³ F22B *37/48*; F28G *7/00*
U.S. Cl. 122—379 **5 Claims**



1. A fluid lancing apparatus for cleaning sludge from between tubes of a tube bundle of a heat exchanger, said tubes being arranged in a plurality of parallel rows, said apparatus comprising:
an elongated lance including a jet head on an end of said lance, said jet head including transversely directed nozzle means;
said lance having first indicia means thereon for identifying a point on said lance spaced by a first predetermined longitudinal distance from said nozzle means;
an alignment rod, having a first end means for abutting a tube of a predetermined row of said plurality of parallel rows of tubes of said tube bundle, and having a second indicia means thereon for identifying a point on said alignment rod spaced by a second predetermined longitudinal distance from first end means; and
said lance and alignment rod being so arranged and constructed that when said first end means of said alignment rod is abutted against said tube of said predetermined row, and when said first indicia means of said lance is aligned with said second indicia means of said alignment rod, said nozzle means of said jet head is aligned with a predetermined space between adjacent tube rows of said tube bundle.

4. A method of initially positioning a lance to clean sludge from between tubes of a tube bundle of a heat exchanger, said tubes being arranged in a plurality of parallel rows, said method comprising the steps of:
providing a first indicia means on said lance and thereby identifying a point on said lance spaced by a first predetermined longitudinal distance from a transversely directed nozzle means of a jet head of said lance;
providing a second indicia means on an alignment rod and

thereby identifying a point on said alignment rod spaced by a second predetermined longitudinal distance from a first end of said alignment rod;

inserting said alignment rod through an access opening of said heat exchanger and abutting said first end of said alignment rod against a tube of a predetermined row of said plurality of rows of tubes of said tube bundle;

inserting said lance through said access opening substantially parallel to said alignment rod and moving said lance forward until said first indicia means of said lance is aligned with said second indicia means of said alignment rod; and

thereby aligning said nozzle means with a predetermined space between adjacent tube rows of said tube bundle.

4,498,428

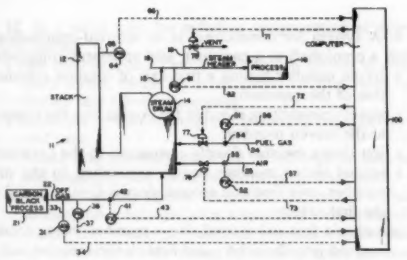
COMBUSTION CONTROL FOR A BOILER

Ronald J. LaSpisa; Merle R. Likins, Jr., and William R. King, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 10, 1984, Ser. No. 598,610

Int. Cl.[3] F22B *5/00*

U.S. Cl. 122—448 R **12 Claims**



1. Apparatus comprising:

a boiler having a burner and a stack associated therewith;

a steam header conduit;

means for providing steam from said boiler to said steam header conduit;

means for venting steam from said steam header conduit;

means for providing a low BTU content offgas to said burner;

means for providing a fuel gas to said burner, wherein the BTU content of said fuel gas is much greater than the BTU content of said offgas;

means for providing air to said burner, wherein the combustion of said offgas and said fuel gas with said air at said burner supplies heat to said boiler;

means for establishing a first signal representative of the actual ratio of the heat supplied by said offgas to said boiler to the total heat supplied by said offgas and said fuel gas to said boiler;

means for establishing a second signal representative of the desired ratio of the heat supplied by said offgas to said boiler to the total heat supplied by said offgas and said fuel gas to said boiler;

means for comparing said first signal and said second signal and for establishing a third signal which is responsive to the difference between said first signal and said second signal, wherein said third signal is scaled so as to be representative of the amount of steam which should be vented from said steam header conduit in order to maintain the actual ratio represented by said first signal substantially equal to the desired ratio represented by said second signal;

Means for controlling the venting of steam from said steam header conduit in response to said third signal;

means for establishing a fourth signal representative of the actual pressure in said steam header conduit;

means for establishing a fifth signal representative of the desired pressure in said steam header conduit;

means for comparing said fourth signal and said fifth signal and for establishing a sixth signal which is responsive to the difference between said fourth signal and said fifth signal, wherein said sixth signal is scaled so as to be representative of the total amount of heat which must be provided to said boiler by said fuel gas and said offgas in order to maintain the actual steam header pressure represented by said fourth signal substantially equal to the desired steam header pressure represented by said fifth signal;

means for establishing a seventh signal representative of the actual total heat being supplied to said boiler by said offgas and said fuel gas;

means for comparing said sixth signal and said seventh signal and for establishing an eighth signal which is responsive to the difference between said sixth signal and said seventh signal, wherein said eighth signal is scaled so as to provide a control signal for manipulating the flow rate of said fuel gas; and

means for manipulating the flow rate of said fuel gas in response to said eighth signal.

4,498,429

FUEL INTAKE SYSTEM FOR SUPERCHARGED ENGINE

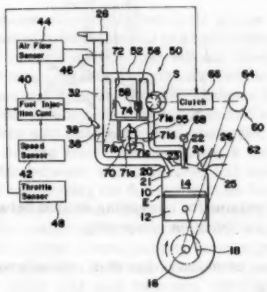
Haruhiko Satow; Haruo Okimoto; Shigeru Sakurai, and Hiroyuki Oda, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 3, 1982, Ser. No. 414,858

Claims priority, application Japan, Sep. 7, 1981, 56-141344; Sep. 21, 1981, 56-150420

Int. Cl.[3] F02B *29/00, 33/00;* **F02M** *69/00*

U.S. Cl. 123—26 **12 Claims**



1. A fuel intake system for an internal combustion engine having a combustion chamber, said fuel intake system comprising, in combination:

primary intake means for supplying a combustible airfuel mixture to the combustion chamber;

auxiliary intake means including a supercharger for supplying at least supercharged air to the combustion chamber, said auxiliary intake means being operable during a high load engine operating condition to supply the supercharged air to the combustion chamber at least during a period in which the chamber undergoes a compression stroke;

drive means adapted to be driven by the engine for driving the supercharger to cause the supercharger to produce the supercharged air;

clutch means operable both to couple the supercharger to the drive means during the high load engine operating condition to drive the supercharger and to decouple the supercharger from the drive means during a low load engine operating condition to bring the supercharger to a halt; and

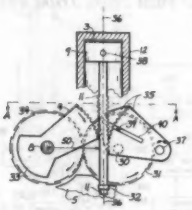
control means provided in the auxiliary intake means for adjusting the pressure of the supercharged air, said control means including a bypass passage communicated at a first end to a portion of the auxiliary intake means between the supercharger and a flow control valve arranged in the auxiliary intake means downstream of the supercharger, a second end of the bypass passage being communicated with another portion of the auxiliary intake means upstream of the supercharger, a bypass valve disposed in the bypass passage for controlling the effective cross-sectional area of the bypass passage, and a bypass valve actuator for opening and closing the bypass valve during the low load engine operating condition and during the high load engine operating condition, respectively independent of backflow upstream of said flow control valve.

4,498,430

LINEAR RECIPROCATING PISTON ENGINE

Robert L. Giuliani, P.O. Box 30862, Honolulu, Hi. 96820; Karen A. Giuliani, and Mark A. Giuliani, both of 45-310 Akimala Pl., Kaneohe, Hi. 96744

Filed Nov. 14, 1983, Ser. No. 551,179
Int. Cl.³ F02B 75/32
U.S. Cl. 123—58 R **18 Claims**



3. An apparatus for converting motion between linear and rotary, the combination comprising:

a housing;

at least one crankless power shaft rotatably supported by the housing;

at least one member having linear reciprocating motion;

at least one rod movable along a linear path, the rod communicating with the member at the one end for effecting linear reciprocating motion therebetween;

at least one crankless first element non-rotatably secured to the power shaft, the first element adapted for direct communication with the rod for effecting continuous rotary motion in the power shaft;

the direct communication occurring during a part of the linear reciprocating motion in one direction;

at least one second element non-rotatably secured to the power shaft;

at least one fourth element rotatably supported by the housing;

the fourth element adapted to communicate directly with the rod during movement in a direction opposite the one direction of the linear recirocating motion; and

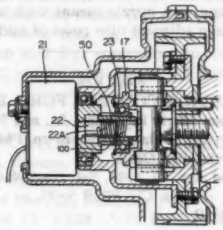
at least one third element communicating with the second and fourth elements for transmitting motion therebetween wherein the said communications convert motion between linear of the member and continuous rotary of the power shaft.

4,498,431

VARIABLE VALVE-TIMING APPARATUS IN AN INTERNAL-COMBUSTION ENGINE

Norihiko Nakamura, Mishima, and Toyokazu Baika, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 23, 1982, Ser. No. 443,919
Claims priority, application Japan, Feb. 8, 1982, 57-17595
Int. Cl.³ F01L 1/34
U.S. Cl. 123—90.15 **9 Claims**



6. A system for connecting, in an internal-combustion engine, a crankshaft to a camshaft, said apparatus comprising

a driven member having a first axis of rotation common to that of the camshaft;

a power-transmitting member for connecting the crankshaft to the driven member;

a first sleeve member fixedly connected to the camshaft;

a second sleeve member fixedly connected to the driven member, said first and second sleeves being coaxial with the first axis;

one of said first and second sleeve members being rotatably inserted into the other; said first sleeve member and second sleeve member having two sets of elongated first and second slits, one set of said slits being circumferentially spaced from the other set, the first slit of each set being located in the first sleeve member, the second slit of each set being located in the second sleeve member adjacent to the corresponding first slit in the first member, the adjacent slits in each set being skewed with respect to said first axis;

abutment means arranged in said adjacent slits of each set for causing a relative angular displacement between the first and the second sleeve members in response to movement of the abutment means along the first axis, said abutment means comprising two corresponding sets of first and second rollers which are arranged in said first and second slits, respectively, of each of set of slits so that the rollers contact corresponding slits, and means for allowing free and independent rotation of each of the rollers about a second axis transverse to the first axis, the two first slits being arranged so that they contact the corresponding first rollers on only one side of said second axis, and the two second slits being arranged so that they contact the corresponding second rollers on only the other side of said second axis, thereby eliminating backlash between the inner and outer sleeves;

a slider on which said abutment means are mounted, said slider being movable along said first axis while rotatable about the first axis;

drive means for moving the slider along the first axis, said drive means comprising a rotary motor and means arranged between the rotary motor and the slider for changing rotation of the rotary motor into linear movement of the support means; and

means responsive to the operating conditions of the engine for operating the drive motor, whereby the relative angular position of the camshaft with respect to the crankshaft is controlled so as to obtain a variable valve timing.

4,498,432

VARIABLE VALVE TIMING ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE OR THE LIKE

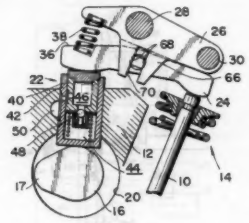
Seinosuke Hara; Shunichi Aoyama, and Kazuyuki Miisho, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jun. 15, 1982, Ser. No. 388,705

Claims priority, application Japan, Jun. 16, 1981, 56-87396[U]; Jun. 30, 1981, 56-98125[U]

Int. Cl.³ F01L *1/34*; F02D *13/02*

U.S. Cl. 123—90.16 **19 Claims**



12. In a valve train for inducing reciprocating motion in a valve having

a cam mounted on a cam shaft which is driven to continuously rotate, means for controllably varying valve operation of said valve, comprising:

a telescopic hydraulic tappet in following engagement with said cam;

a rocker arm pivotally mounted at one end on said tappet and engaging said valve at the other end thereof;

a reaction member against which said rocker arm is abutable to establish a fulcrum after a specified movement of said rocker arm by said hydraulic tappet, said reaction member connected to a bias means for biasing apart the reaction member and the rocker arm; and

control means for selectively supplying hydraulic fluid under pressure to said telescopic hydraulic tappet whereby operating characteristics of said valve are varied varying timing of the establishment of said fulcrum.

4,498,433

MEMBER SUCH AS AN ENGINE COVER ADJACENT TO AN AUTOMOTIVE ENGINE

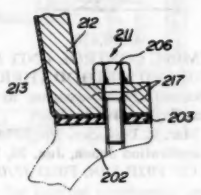
Naoki Ogawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 150,901, May 16, 1980, abandoned. This application Jun. 20, 1983, Ser. No. 505,724

Claims priority, application Japan, May 18, 1979, 54-61766; May 31, 1979, 54-67765; May 31, 1979, 54-67766; May 31, 1979, 54-67767

Int. Cl.³ F02M *9/10*

U.S. Cl. 123—90.38 **11 Claims**



1. A noise-reducing member attached to an engine, said member being shaped in the form of a layer and having a flange portion for attachment to said engine, said member being formed from a homogeneous body comprising fibers selected from the group consisting of organic and inorganic fibers, said fibers having been mixed with a resin binder and a crosslinking agent for the binder, and heated to effect cross linking of the crosslinking agent to form said shaped layer; said flange portion only further being impregnated with a synthetic resin, without impregnating the remainder of said member, to form a resulting resin-impregnated hardened flange portion; said member, when attached to the engine through said flange portion, being effective to damp vibrations transmitted from the engine.

4,498,434

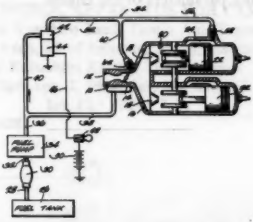
FUEL PRIMING SYSTEM WITH INTEGRAL AUXILLIARY ENRICHMENT FEATURE

Gene F. Baltz, Lake Villa, Ill.; Amos M. Clark, Kenosha, Wis.; David J. Hartke, Waukegan, Ill., and Donovan K. Jourdan, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 29, 1983, Ser. No. 508,943

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—187.5 R **6 Claims**



1. A crankcase scavenged, two-cycle engine comprising a manifold adapted to be connected to a carburetor for receiving therefrom a fuel/air mixture, a crankcase connected to said manifold for receiving therefrom the fuel/air mixture, a check valve between said manifold and said crankcase for preventing fluid flow from said crankcase to said manifold and permitting fluid flow from said manifold to said crankcase, a combustion chamber extending from said crankcase, a transfer passage communicable between said crankcase and said combustion chamber for transferring the fuel/air mixture from said crankcase to said combustion chamber, a normally closed valve adapted to be connected to a source of fuel and including an outlet, a first conduit communicating between said outlet and said transfer passsage, a second conduit communicating between said outlet and said induction manifold, and means connected to said valve for selective opening thereof.

4,498,435

FUEL-INJECTION INTERNAL-COMBUSTION ENGINE

Günter Krömer, Heilbronn, Fed. Rep. of Germany, assignor to Audi Nsu Auto Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 15, 1982, Ser. No. 434,598

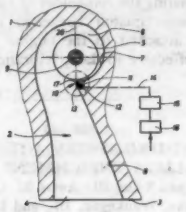
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141880

Int. Cl.³ F02M *35/10*

U.S. Cl. 123—306 **4 Claims**

1. A fuel-injection internal-combustion engine with direct injection, having an air suction passage formed as a twist forming passage means with walls and comprising a curved passage section having a valve chamber with a circumferential wall joined thereto, the valve chamber enclosing an inlet valve and said circumferential wall being substantially rotationally symmetrical to the longitudinal axis of said inlet valve, the passage section opening mainly tangentially into the valve chamber and forming an edge between one of said passage walls and the circumferential wall of the valve chamber, and having means

for influencing the twist in the air suction passage comprising an elastically deformable hollow body which is located in an undercut cavity provided in the edge and extending substantially parallel to the longitudinal axis of the inlet valve, the



hollow body being deformable by pressure means connected to its internal space such that at least part of the hollow body can be made to project in to the air suction passage in dependence upon operating parameters of the engine.

4,498,436

AUXILIARY AIR SUPPLYING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

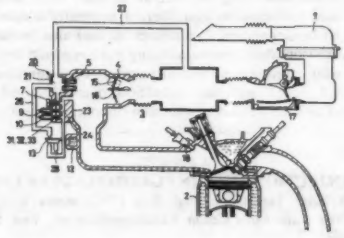
Tomofusa Horiuchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 29, 1983, Ser. No. 490,227

Claims priority, application Japan, May 7, 1982, 57-66165[U]

Int. Cl.³ F02M *23/04*

U.S. Cl. 123—339 **11 Claims**



1. An auxiliary air supplying apparatus for an internal combustion engine having throttle valves disposed in an intake passageway, comprising,

a bypass passageway having a first side connected to said intake passage upstream of said throttle valves,

an air box connected to a second side of said bypass passageway,

a plurality of auxiliary air passageways being branched in parallel between said air box and said intake passageway downstream of said throttle valves, and

means for controlling the flow rate of air which flows respectively through said auxiliary passageways in accordance with operating conditions of the engine.

4,498,437

CENTRIFUGAL GOVERNOR FOR INTERNAL COMBUSTION ENGINE

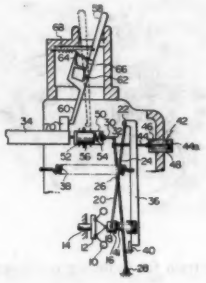
Masayoshi Ohkoshi, Matsuyama, and Yoshiro Suzuno, Kawagoe, both of Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,382

Claims priority, application Japan, Dec. 19, 1981, 56-190177[U]

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—373 **10 Claims**



1. In a centrifugal governor for an internal combustion engine having flyweights responsive to an engine speed, a shifter rod driven by the flyweights to move against a governor spring which acts on the shifter rod through a tension lever, a guide lever pivotally connected with the shifter rod, and a floating lever pivotally connected with the guide lever to transmit a displacement of the guide lever to a control rod of the fuel injection pump, the improvement comprising:

first means for yieldably forcing the control rod to a maximum fuel injection volume position in a fuel increasing direction when the engine is to be started up; and

second means for moving the control rod in a fuel decreasing direction opposite to the fuel increasing direction while causing the first means to yield, in response to a predetermined engine speed during engine starting;

whereby the fuel injection volume from the pump is increased to the maximum during engine starting and, thereafter, controlled in accordance with a varying engine speed;

the first means comprising an articulated lever assembly engagable with the control rod at one end thereof and the second means comprising a relatively slidable assembly disposed between the floating lever and the control rod;

the articulated lever assembly comprising a first lever and a second lever pivotally mounted at one end thereof on a common shaft, said first lever being operated into an angular movement at the other end, said second lever being engagable with the control rod at the other end.

4,498,438

IGNITION TIMING CONTROL UNIT FOR A CAR ENGINE AND METHOD THEREOF

Kunihiko Sato, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 9, 1984, Ser. No. 587,976

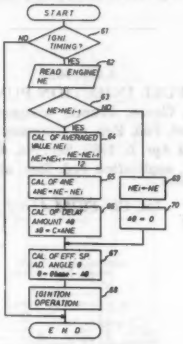
Claims priority, application Japan, Jun. 24, 1983, 58-114471

Int. Cl.³ F02P *5/04*; F02D *37/02*

U.S. Cl. 123—418 **6 Claims**

1. An ignition timing control unit for a car engine which comprises an operational control circuit for controlling the output timing of ignition current to be applied to a spark plug in accordance with a crank angle signal produced for every equal crank angle in synchronization with the rotation of a crank shaft; said operational control circuit further comprising;

(a) engine speed detecting means for detecting the engine speed in accordance with the crank angle signal,
(b) memory means for storing averaged values of the engine speed,
(c) basic spark advance angle calculating means for calculating a basic spark advance value from running conditions of the engine,
(d) averaging means for newly carrying out an averaging process in accordance with the engine speed and an averaged value of the engine speed and afterward storing the



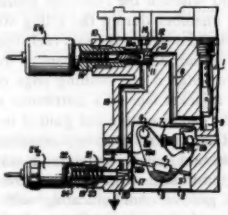
result of the averaging process into said memory means as one averaged value of the engine speed and for updating said average value of the engine speed which has been stored in said memory means, and
(e) calculating means for calculating an amount to be corrected of the spark advance angle in accordance with the difference between the averaged out value and the engine speed and for controlling the output timing of the ignition current in accordance with the amount thus corrected of the basic spark advance angle value by said amount to be corrected.

4,498,439

CARBURETOR FITTED WITH ELECTROMAGNETIC DEVICES FOR INTERCEPTING THE FLOW OF FUEL DURING ACCELERATOR RELEASE

Mauro Franchini, Bologna; Angelo Sarasso, Turin, and Angelo Puccetti, Lagaro, all of Italy, assignors to Weber S.P.A., Turin, Italy

Filed Mar. 21, 1983, Ser. No. 477,440
Claims priority, application Italy, Apr. 13, 1982, 3397 A/82
Int. Cl.³ F02M *3/08*
U.S. Cl. 123—438 **5 Claims**



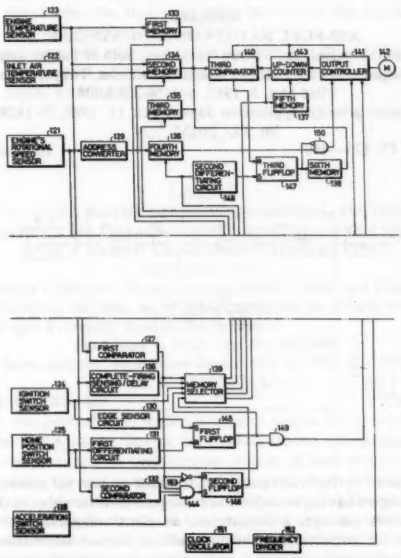
1. Carburetor for internal combustion engines, fitted with electromagnetic devices for intercepting the flow of fuel during accelerator release, comprising at least: a main barrel; a throttle positioned in said main barrel and which turns with a shaft; a main lever splined on said shaft and connected to to the accelerator to position said throttle; a speed adjusting screw to define the position of said throttle when accelerator is released; an electrical contact between said speed adjusting screw and said main lever to inform an electronic control unit of the position of said throttle and in particular of the definite position of said speed adjusting screw; an idle system which starts from a cavity full of fuel and which opens into said main barrel by means of progression and idle mixture holes and which comprises a first hole for metering the emulsion air; said carburetor being fitted with a first solenoid valve which is controlled by said power unit to close said first hole; said carburetor being characterised by the fact of having an obturator rod for assisting with an opening positioned in said idle system; said obturator being part of a second solenoid valve for moving it from a first position in which said obturator totally or partially closes said opening to a second position in which said obturator totally opens said opening to increase vacuum signal on said first hole and vice-versa; said control unit serving to send control signals to said second solenoid valve to maintain said obturator in said second position for a definite period of time subsequent to accelerator release.

4,498,440

MIXTURE CONTROL APPARATUS FOR CARBURETOR

Toshio Nomura; Yasuhiro Imai; Tomio Aoi; Tetsuo Nakajima, and Hiroshi Irino, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1984, Ser. No. 595,867
Int. Cl.³ F02M *7/24*
U.S. Cl. 123—438 **1 Claim**



1. A mixture control apparatus for a carburetor comprising a choke valve disposed on the upstream side and a throttle valve on the downstream side respectively in an air inlet relative to a venturi section admitting an opening end of a main fuel nozzle, first rotary cam means interlocked with said choke valve and adapted to operate said choke valve from the totally opened position to the totally closed position thereof, second rotary cam means interlocked with said throttle valve and adapted to operate said throttle valve to a prescribed degree of opening for fast idling, and an electric motor for driving said first and second rotary cam means and determining the rotational positions thereof according to the operating condition of an internal combustion engine, which mixed control apparatus

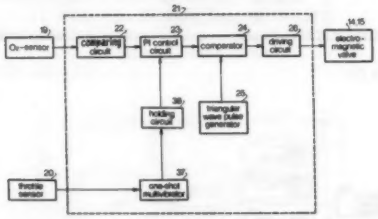
is characterized in that said electric motor is adapted to be rotated in a normal direction and in a reverse direction from a home position thereof as the boundary, that said first and second cam means have the shapes thereof selected so that when said electric motor is rotated in the normal direction from said home position, said choke valve will be retained at a substantially fully opened position and said throttle valve will have the degree of opening thereof increased and, when said electric motor is rotated in the reverse direction from said home position, said choke valve will have the degree of opening thereof decreased and said throttle valve will have the degree of opening thereof increased, that the transition of said electric motor from the reverse rotation side past the home position to the normal rotation side is effected based on a logical conjunction of at least the three conditions that the engine temperature should exceed a boundary temperature between the cold and hot states, the engine's rotational speed should exceed the prescribed value, and the throttle lever should be mechanically separated from said second rotary cam means, and that the characteristic of hysteresis is conferred upon the switch between the cold and hot states by causing said boundary temperature between the cold and hot states to be switched in accordance with whether the engine is in the cold state or in the hot state, and that said electric motor is provided, with means capable of preventing said electric motor from moving from the side of normal rotation thereof past said home position to the side of reverse rotation thereof after said engine has been changed to its hot state and unless a stop of said engine is detected.

4,498,441

AIR-FUEL RATIO CONTROL SYSTEM

Masaaki Ohgami, and Mitsuo Nakamura, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,708
Claims priority, application Japan, Oct. 13, 1980, 55-142817
Int. Cl.³ F02M 7/24
U.S. Cl. 123—440 **10 Claims**



1. In an air-fuel ratio control system for an internal combustion engine having an induction passage, a throttle valve in the induction passage, a carburetor, an electromagnetic valve means for correcting the air-fuel ratio of the air-fuel mixture supplied to said carburetor, an O_2-sensor for detecting oxygen concentration of exhaust gases from the engine, and a feedback control circuit comprising a proportion and integration circuit responsive to the output of said O_2-sensor for producing a control output signal for driving said electromagnetic valve means for correcting the air-fuel ratio; the improvement comprising

detecting means for detecting the operation of said engine for producing an output signal when the throttle valve of the engine is widely opened;

means comprising a one-shot multivibrator responsive to said output signal of said detecting means for producing another output signal for a fixed predetermined period always the same;

voltage applying means for continuously applying a fixed predetermined voltage always the same to said feedback control circuit when said voltage applying means is connected to said feedback control circuit;

first switch means responsive to said another output signal of said one-shot multivibrator for connecting said voltage applying means with said feedback control circuit; and

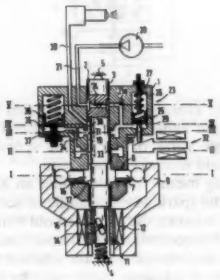
second switch means responsive to said another output signal of said one-shot multivibrator for rendering said integration circuit operative as an amplifier for said predetermined voltage from said voltage applying means.

4,498,442

FUEL INJECTION PUMP

Raymond Tissot, Genas, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 6, 1983, Ser. No. 482,650
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224152
Int. Cl.³ F02M 41/02
U.S. Cl. 123—447 **8 Claims**

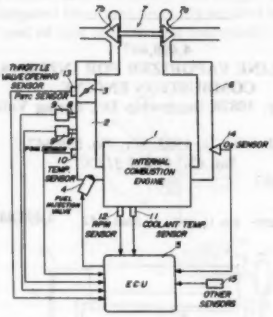


1. A fuel injection pump having at least one work chamber enclosed by a pump piston in a cylinder in a housing, which work chamber can be made to communicate with an associated fuel injection location via at least one supply line during a compression stroke of the pump piston and with a fuel supply conduit during the filling stroke of the pump piston; a relief conduit leading to a reservoir chamber having a movable wall loaded by a restoring force, the communication of the relief conduit with the work chamber being opened after an adjustable compression stroke of the pump piston, by means of a control edge guided in synchronism with the drive of the pump piston, wherein the location of a control point of the control edge relative to a reference point of the pump piston drive means is variable and wherein the reservoir chamber is connected to the work chamber during the filling stroke of the pump piston, characterized in that the said fuel supply conduit communicates with an adjustable fuel quantity metering device, and said control edge is one limiting edge of a control groove disposed on a jacket face of a distributor rotatable in synchronism with the pump piston and guided in a cylinder wherein the width of said control groove determines the piston stroke during which said relief conduit and said reservoir chamber are connected to said work chamber, the distributor having a distributor groove communicating with the pump work chamber, by means of which distributor groove one after another of a multiplicity of supply lines leading away from the cylinder can be made to communicate, upon the rotation of the distributor, with the pump work chamber during a compression stroke of the pump piston, and that the location of the control point of the control edge relative to a reference point of the pump piston drive means is variable in accordance with operating parameter.

4,498,443
FUEL SUPPLY CONTROL METHOD HAVING FAIL-SAFE FUNCTION FOR ABNORMALITIES IN INTAKE PASSAGE PRESSURE DETECTING MEANS OF AN INTERNAL COMBUSTION ENGINE HAVING A TURBOCHARGER

Shumpei Hasegawa, Niiza, and Akihiro Yamato, Shiki, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed May 20, 1983, Ser. No. 496,590
Claims priority, application Japan, May 24, 1982, 57-87753
Int. Cl.³ F02M 51/00
U.S. Cl. 123—478 4 Claims



1. A method for electronically controlling the quantity of fuel being supplied to an internal combustion engine having a turbocharger, an intake passage and a throttle valve arranged in said intake passage, and means for detecting pressure in said intake passage at a location downstream of said throttle valve, in response to values of engine control parameters including at least a value of intake passage absolute pressure of the engine detected by said pressure detecting means, the method comprising the steps of:

(1) detecting whether or not there is an abnormality in the functioning of said pressure detecting means;

(2) determining whether or not the engine is operating in a predetermined supercharged operating condition;

(3) determining the quantity of fuel by the use of a predetermined pressure value in lieu of the valve of said intake passage absolute pressure detected by said pressure detecting means when an abnormality is detected in the functioning of said pressure detecting means, only while the engine is determined to be operating in an operating condition other than said predetermined supercharged operating condition, and supplying the determined quantity of fuel to the engine; and

(4) interrupting the fuel supply to the engine when an abnormality is detected in the functioning of said pressure detecting means, while the engine is determined to be operating in said predetermined supercharged operating condition.

4,498,444
METHOD OF CONTROLLING ENGINE

Kenji Tabuchi, Katsuta; Masami Shida, Mito, and Toshio Ishii, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1984, Ser. No. 574,580
Claims priority, application Japan, Jan. 28, 1983, 58-11445
Int. Cl.³ F02M 51/00
U.S. Cl. 123—478 4 Claims

1. A method of controlling engine comprising steps of:

generating a reference cylinder signal each time the shaft of a 4-stroke cycle engine is rotated twice;

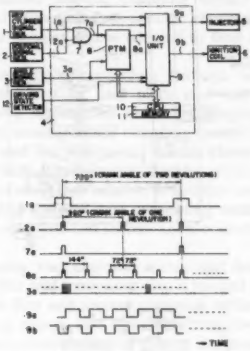
generating a positional signal each time the shaft of said engine is rotated once;

generating a reference signal on the basis of said reference cylinder signal and said positional signal;

generating a fuel injection signal on the basis of said positional signal or said reference signal; and

generating an ignition on the basis of said reference signal, wherein said method further includes steps of:

monitoring the generation of said reference cylinder signal and said positional signal;



generating said reference signal ½ its period after the first signal when the first signal after the start of the engine is only said positional signal; and

generating said reference signal immediately after said positional signal when said reference signal and said positional signal are detected first.

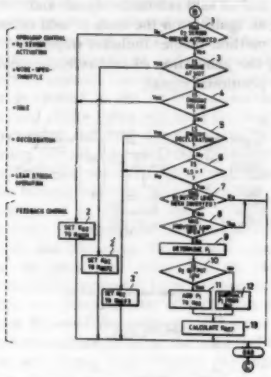
4,498,445
AIR/FUEL RATIO FEEDBACK CONTROL SYSTEM ADAPTED TO OBTAIN STABLE ENGINE OPERATION UNDER PARTICULAR ENGINE OPERATING CONDITIONS

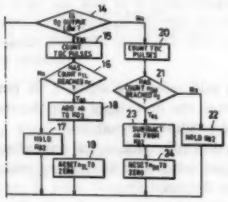
Shumpei Hasegawa, Niiza; Noriyuki Kishi, Tokyo, and Takashi Koumura, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1983, Ser. No. 492,399
Claims priority, application Japan, May 6, 1982, 57-75615
Int. Cl.³ F02M 51/00
U.S. Cl. 123—489 2 Claims

1. An air/fuel ratio feedback control system for an internal combustion engine having an exhaust system, comprising: a sensor arranged in said exhaust system of said engine, for detecting the concentration of exhaust gases emitted from said engine, and electrical circuit means for controlling the air/fuel ratio of an air/fuel mixture being supplied to said engine to a predetermined value, by the use of a first coefficient having a value variable in response to the output of said sensor, said electrical circuit means including means for detecting operating conditions of said engine inclusive of a plurality of divided subregions of a feedback control region in which is effected the control of the air/fuel ratio of said air/fuel mixture responsive to an output generated by said sensor, and a plurality of particular operating regions other than said feedback control region, means for calculating a mean value of values of said first coefficient occurring when said engine is operating in each of said divided subregions of said feedback control region, and means for selecting one of such calculated mean values of said first coefficient corresponding to each of said particular operating regions, when it is detected by said operating condition detecting means that said engine is operating in said each particular

operating region, and means for controlling the air/fuel ratio of said air/fuel mixture by the use of said one selected mean





value, in place of said first coefficient, while said engine is operating in said each particular operating region.

4,498,446

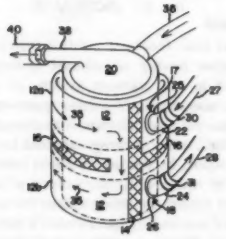
DIESEL FUEL HEATER

Daniel G. Judson, P.O. Box 417, Lisbon, Me. 04250

Filed Jun. 29, 1983, Ser. No. 508,821

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **8 Claims**



1. A diesel fuel heater for preheating diesel fuel at a diesel fuel filter in diesel powered vehicles having a diesel engine cooled by a liquid coolant circulating system comprising:

flexible elongate fluid jacket means having sufficient length for wrapping around the diesel fuel filter of the diesel engine, said flexible elongate fluid jacket means defining a channel having inlet means and outlet means for operatively coupling into the liquid coolant circulating system of the diesel engine, thereby preheating diesel fuel at the filter by transferring heat from the circulating liquid coolant to diesel fuel passing through the diesel fuel filter;

said channel defined by the flexible elongate fluid jacket means being distributed and arranged to cover substantially the entire surface of the circumference of the diesel fuel filter thereby insulating and protecting the diesel fuel filter from cold air wind during operation of the vehicle;

and means for removable and replaceably securing said flexible elongate fluid jacket means in operative position around a diesel fuel filter for rapid placement of the flexible elongate fluid jacket means around the diesel fuel filter during cold weather by an operator of the diesel powered vehicle.

4,498,447

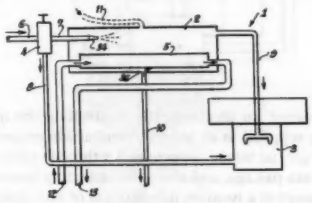
GASOLINE VAPORIZER FOR INTERNAL COMBUSTION ENGINE

Richard Harvey, 10828 Buggywhip Dr., Spring Valley, Calif. 92078

Filed Oct. 6, 1983, Ser. No. 539,647

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **5 Claims**



1. A vaporizing apparatus for use in connection with the carburetor of a gasoline internal combustion engine which comprises:

a closed chamber having a gasoline inlet and a vapor outlet;

heating means within said chamber;

means for diverting a portion of the fuel supplied to the carburetor into said outlet;

means associated with said inlet for spraying said fuel against said heating means in order to produce vapors;

ducting means to deliver said vapors into the carburetor wherein: said means for diverting comprises:

a metering valve having an inlet port and first and second outlet ports;

an adjustable gate controlling the distribution of fuel admitted through said inlet between said outlet ports; and

ducting means connecting said inlet port to a pressurized fuel supply, said first outlet port to the fuel inlet of the carburetor and said second outlet port to the gasoline inlet chamber said heating means comprises a pipe through which a hot fluid derived from the engine cooling system is circulated; and

said chamber comprises a perforated septum lying horizontally across the lower half of the chamber;

said pipe is in contact with said septum;

said means for spraying includes at least one nozzle located above said septum.

4,498,448

RELEASE DEVICE

James D. Fletcher, P.O. Box 218, Bodfish, Calif. 93205

Filed Jul. 22, 1982, Ser. No. 401,028

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—35 A **5 Claims**

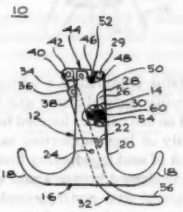
1. An improved mechanical bowstring release device automatically biased to the locked position, said device comprising, in combination:

a. a hollow housing having a longitudinal space therein extending to the front end thereof;

b. a bowstring retainer pivotably secured in said space and including a bowstring-retaining end extending transversely into and terminating in said housing at the front end of said space and pivotable between a locked bowstring-retaining first position blocking the front end of said space to trap said bowstring in said space and an unlocked bowstring-releasing space-opening second position, said retainer also including a coupling end extending laterally of said housing; and,

c. trigger means for locking said retainer in said first position and for urging said retainer into said unlocked second position to release said bowstring, said trigger means being:

i. an elongated lever arm pivotally secured in said space, the rear end of said arm curving rearwardly of said housing,



the front end of said lever arm positioned generally rearwardly of and adjacent said coupling end of said retainer,

ii. coupling means connected to and positioned between said coupling end of said retainer and said front end of said lever arm, said coupling means extending out of said housing and rotatable generally trasversely with the front end of said lever arm into said housing and into said unlocked position;

iii. a generally transverse biasing spring in said frame bearing against said lever arm forward of its pivot point in said space to bias said retainer into said locked position; and,

iiii. generally transverse retainer movement limit means rearward of said spring in said housing preventing rotational movement of said retainer into an unlocked position unbiased by said biasing spring towards said locked position.

4,498,449

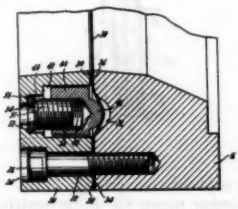
PRECISION TENSIONING DEVICE FOR ID SAW BLADE

George S. Kachajian, Franklin Lakes; Robert E. Steere, Jr., Boonton, and Wesley Charles, Pompton Lakes, all of N.J., assignors to Silicon Technology Corporation, Oakland, N.J.

Filed Apr. 5, 1982, Ser. No. 365,301

Int. Cl.³ B28D *1/04*

U.S. Cl. 125—15 **3 Claims**



1. Apparatus for tensioning an inner diameter blade disposed within said apparatus comprising:

a first annular blade clamping member having a first annular clamping surface for confronting a first side of said blade, a first annular recess disposed radially inwardly of said first clamping surface, a plurality of cylindrical recesses in communication with said first annular recess and disposed in a circular array coaxial with said blade, and a plurality of access openings each connecting one of said cylindrical recesses to the ambient;

a second annular blade clamping member having a second annular clamping surface for confronting a second side of said blade which is opposite said first side of said blade, said second annular clamping surface adapted to be aligned with said first annular clamping surface, and a second annular recess adapted to face said first annular recess;

connecting means extending through said first annular clamping surface, said blade and said second annular clamping surface for securely clamping said first and second annular blade clamping members to each other along said first and second annular clamping surfaces with said blade therebetween thereby preventing any movement of said blade relative to said first and second annular clamping surfaces, said connecting means disposed internal to said first and second annular blade clamping members;

a tensioning ring disposed within said first annular recess, such that said tensioning ring is located radially inwardly of said first and second clamping surfaces and said connecting means, said tensioning ring formed with a protruding portion adapted to abut the portion of said blade located between the associated first and second annular recesses, and said tensioning ring having internal threads at a plurality of locations on the side of said tensioning ring opposite said protruding portion;

a plurality of tensioning screws disposed within said first annular recess with one end of each tensioning screw threadably engaging an associated one of said internal threads of said tensioning ring and the other end of each tensioning screw located within an associated cylindrical recess and being in communication with said ambient through an associated access opening, said tensioning screws having diameters greater than the diameters of said recess openings, and each of said tensioning screws being formed with an internal socket at the end remote from said associated tensioning ring and proximate to said access opening whereby said sockets communicate with the ambient through said access openings to permit movement of said tensioning screws to move said tensioning ring axially to selectively deform said blade into and out of said second annular recess while closing off said cylindrical recess and said first and second annular recess from the ambient.

4,498,450

GANG SAW FOR CUTTING BLOCKS OF STONE

Artur Klein, Netphen, Fcd. Rep. of Germany, assignor to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 268,448, May 29, 1981, abandoned. This application Jul. 20, 1983, Ser. No. 515,448

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1981, 3103482

Int. Cl.³ B28D *1/02*

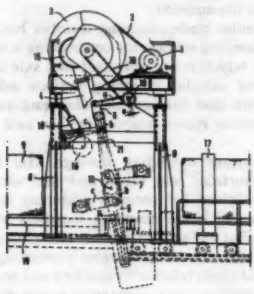
U.S. Cl. 125—16 R **5 Claims**

1. An improved vertical gang saw for sawing blocks of stone or the like, having a saw frame which is symmetrically provided with saw blades, is attached to a support, and is driven by drive means, the improvement which comprises:

said frame being driven at its center by said drive means to provide an up stroke and a down stroke from said frame center;

said frame being attached to said support by straight line guide means connected to said frame respectively at an end and at said center of said frame, said straight line guide means arranged to provide approximately straight line movement of said frame;

said frame end straight line guide means being moveable to reciprocatingly pivot said frame about is center at the end of each stroke, whereby a first portion of said saw blades



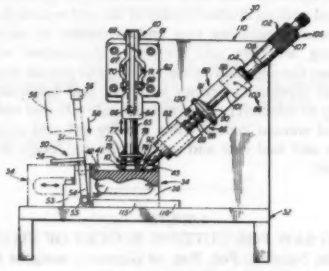
engage said blocks during each up stroke, a second portion of said saw blades engage said blocks during each down stroke, and each said portion contacts different portions of said blocks.

4,498,451

CUTTING ARTICLES ALONG KNOWN PLANES

Richard K. Beltz, Hamburg, and Donald M. Large, Temple, both of Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Aug. 5, 1983, Ser. No. 520,662
Int. Cl.³ B28D *1/32*
U.S. Cl. 125—23 R **12 Claims**



1. A method of cutting an article having at least one plane known to facilitate splitting therealong, comprising:

supporting the article in a laterally unrestrained manner on a surface capable of developing lateral restraint by force applied normal to and upon an exposed top surface of the supported article;

applying resilient force substantially normal to and upon the exposed top surface of the article along the splitting plane sufficient to cause separation stresses along such plane and to develop lateral resistance to an expected cutting force; and

advancing a cutter at an exposed top edge of the article into and along the splitting plane at a given angle to the exposed top surface, for a sufficient distance and with sufficient separation of cut surfaces, that a split develops and propagates through the article along the splitting plane.

4,498,452

KETTLE WITH ASH CATCHER

Erich J. Schlosser, Lindenhurst, and George Stephen, Jr., Palatine, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.

Filed Jun. 21, 1982, Ser. No. 390,242
Int. Cl.³ F24C *1/16*
U.S. Cl. 126—9 R **4 Claims**

1. Cooking apparatus comprising a hemispherical cooking vessel having a generally vertical center axis with a plurality of spaced openings and an ash catcher located below said cooking vessel with a plurality of legs supporting said cooking vessel and ash catcher, each of said legs having first and second ends and being generally U-shaped between said ends and having a threaded portion on said first end received into one of said openings in said cooking vessel with a fastener received on said threaded portion, said legs being circumferentially-spaced and extending radially outwardly to form lower support surfaces each of said legs having portions extending inwardly and upwardly with said second ends connected to said ash catcher, said ash catcher having a plurality of horizontal slots respectively receiving said second ends of said legs through a sliding connection whereby said cooking apparatus can be assembled without any tools and bases of said U-shaped legs define said lower support surfaces with said cooking vessel supported on said first ends of said legs and said ash catcher supported on said second ends of said legs and whereby said ash catcher forms a part of the support for said cooking vessel.

4,498,453

COOKING APPLIANCE

Katsuroh Ueda, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP82/00448, § 371 Date Jul. 22, 1983, § 102(e) Date Jul. 22, 1983, PCT Pub. No. WO83/01991, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 24, 1982, Ser. No. 522,363
Claims priority, application Japan, Nov. 25, 1981, 56-189741
Int. Cl.³ F24C *15/16*
U.S. Cl. 126—21 A **3 Claims**

1. A cooking appliance comprising:

a heating chamber means for accommodating food to be heated;

a combustion chamber being positioned behind the heating chamber means and having a gas burner means provided therein for generating hot combustion air;

an air blast chamber surrounding the sides and back of the combustion chamber;

a boundary wall means for separating the heating chamber means from the combustion chamber and the air blast chamber;

said wall means having a plurality of vent hole means centrally located therein for allowing vapors from the heating chamber means to pass into the combustion chamber;

said wall means also having a plurality of blast hole means, located along the periphery thereof, for allowing combustion air mixed with the vapors to be recirculated from the combustion chamber through the air blast chamber into the heating chamber means;

a fan means, positioned in the air blast chamber behind the combustion chamber, for recirculating combustion air mixed with the vapors from the combustion chamber through the air blast chamber, through the blast hole means in the wall means, and back into the heating chamber means; and

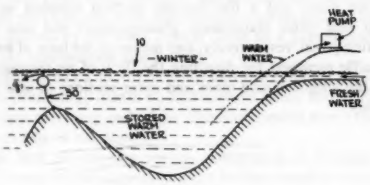
an exhaust passage means, arranged in direct communication with the combustion chamber, for creating a slight negative air pressure in the combustion chamber so that part of the combustion air mixed with the vapors is exhausted to the outside atmosphere and the rest is recirculated to the heating chamber means while the fan means is operating.

4,498,454

METHOD OF AND MEANS FOR SEASONALLY STORING HEAT IN A BODY OF WATER

Gad Assaf, 23 Keren Kayemet St., Rehovot, Israel

Filed Jan. 14, 1981, Ser. No. 225,004
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—415 **18 Claims**



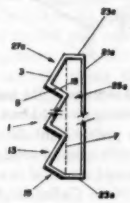
1. A method for storing heat in a closed basin having an upper layer of relatively fresh water connected by a strait to a larger body of relatively saltier water comprising the step of selectively controlling the exchange of water between the body of water and the basin as a function of the season of the year.

4,498,455

GLAZING MATERIAL

Ronald J. Gramm, 113 Snowden Dr., Pittsburgh, Pa. 15229

Filed Nov. 17, 1980, Ser. No. 207,449
Int. Cl.³ G02B *17/00*
U.S. Cl. 126—417 **7 Claims**



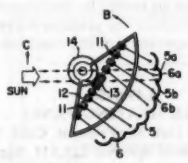
1. An apparatus for the selected admittance, absorption and reflection of radiant solar energy from a source thereof depending on the angle of incidence of said radiant solar energy relative to said apparatus, comprising: a first series of parallel planar members and a second series of parallel planar members contiguously and alternatively disposed along a common plane in an angled relation to each other; with one planar member from both of said series of planar members together with the common plane along which said members are angularly disposed forming a continuum of triangles in which the first angle of the triangle at the point of intersection of said planar member from the first series with said common plane is in the range of between about 15° to 60°, the second angle of the triangle, at the point of intersection of said planar member from said second series with said common plane is in the range of between about 30° to 90° and the third angle of the triangle is between about 60° to 120°; one of said series of members defining a transparent zone for admittance therethrough of radiant solar energy and the other of said series of planar members manufactured from a transparent material, and defining in at least a portion thereof, an opaque zone including a radiant solar energy absorbing material on one side thereof and a radiant solar energy reflecting material thereon between said absorbing material and the source of radiant solar energy, whereby radiant solar energy contacting one side of said planar members in said opaque zone is absorbed and radiant solar energy contacting the opposite side thereof is reflected; and a spaced transparent planar member mounted in a spaced relation with the first and second series of planar members, said spaced transparent planar member being generally parallel with the common plane.

4,498,456

SELF-TRACKING MECHANISMS FOR SOLAR COLLECTORS

Kenichi Hashizume, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushika Kaisha, Kawasaki, Japan

Filed Dec. 23, 1983, Ser. No. 564,679
Claims priority, application Japan, Dec. 27, 1982, 57-232325
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—425 **20 Claims**



1. A solar tracking mechanism comprising:

a frame;

a main collector attached to said frame;

a plurality of elements each made out of a shape memory alloy and each contracting to a memorized shape when the temperature of said element is above a predetermined temperature;

means for concentrating solar energy on said plurality of elements;

stretching means for applying a stretching force to each of said elements to permit each element to contract when said element is heated past said predetermined temperature and to stretch each element when said element is not heated past said predetermined temperature; and

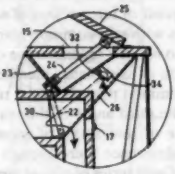
means associated with said main collector and said stretching means, for transmitting mechanical motion caused by the stretching and contracting of said element to said main collector to rotate said main collector.

4,498,457

CONTROL FOR SOLAR SYSTEM

William Kreamer, P.O. Box 673, St. Jospeh, Mich. 49085

Filed Apr. 22, 1983, Ser. No. 487,619
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **4 Claims**



1. In an exteriorly mounted solar heating system for heating an enclosed space such as a room in a building wherein air from said space is directed into the system housing through an inlet port, heated by being passed over an absorber exposed to solar energy and then redirected through an outlet port into said space, an improved control comprising

means for providing a vent to atmosphere from the top of said system housing

enclosure members for said outlet port and said vent

a temperature sensitive actuator connected to said members for simultaneously opening said outlet port and closing said vent and vice versa

said actuator being exposed to and sensing the temperature of air from said enclosed space passing through said inlet port and being powered solely by temperature sensitive phase-change material which exhibits a melting temperature in the upper region of the normal comfort range, changing phase responsive to the temperature sensed

whereby air heated by passing over said absorber is either vented to atmosphere when air passing from said space reaches a pre-determined elevated temperature or redirected into said space when said passing air drops to a pre-determined lower temperature, and

means for biasing the temperature of air sensed by said actuator so as to adjust said control's effective room temperature set-point

said biasing means comprising means for introducing a controllable fraction of air heated by said absorber into the air from said space to which the actuator is exposed so that it may sense the temperature of the combination.

4,498,458

SOLAR HEATING PANEL

Louis H. Soper, 36742 Oak St., Fremont, Calif. 94536

Continuation-in-part of Ser. No. 228,111, Sep. 23, 1981, abandoned. This application May 12, 1983, Ser. No. 494,091
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **2 Claims**

1. A solar collector plate for use in a solar panel assembly comprising an elongated flat sheet metal plate of rectangular shape adapted to be positioned between adjacent studs or rafters forming part of the frame of a building structure which comprise the sidewalls of said solar panel assembly, said collector plate having a length corresponding to the length of said solar panel assembly and width corresponding to the distance between said adjacent studs or rafters and adapted to be positioned intermediate an outer transparent glazing panel and an inner insulating panel comprising the respective outer and inner faces of said panel assembly to thereby provide inner and outer sections within and along the length of said panel assembly, said collector plate including a base area having an opening through which air to be heated enters said assembly and flows upwardly in separate paths through said inner and outer sections and outlet means at the top of said panel assembly whereby said heated air may be discharged for use, a series of baffle members fastened to both the front and rear faces of said collector plate in parallel relation at spaced intervals along the length thereof, each of said baffle members having a length corresponding to the width of said collector plate with one series of baffle members thereof having a width extending from said front face of said collector plate to said outer transparent face and another series of baffle members having a width extending from said rear face of said collector plate to said

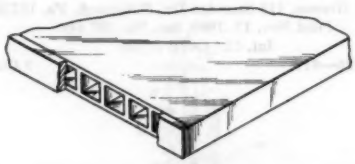
inner insulating wall, each said baffle member being a J-shaped channel having a flat top portion adapted to abut against said collector plate and a flat bottom portion adapted to abut against said outer transparent glazing panel and said inner insulating panel, respectively, and means in the base of each of said baffle members for directing the flow of air through and along the length of said inner and outer sections of said panel assembly.

4,498,459

PHASE-CHANGE HEAT STORAGE BUILDING PANELS

Eliyaho Korin, Beer Sheva; Elazar Rappaport, Ramat Ha-Sharon; Dov Pasternak, Arad; Aharon S. Roy, Beer-Sheva, and David Wolf, Omer, all of Israel, assignors to Ben-Gurion University of the Negev, Beer Sheva, Israel

Filed Dec. 3, 1982, Ser. No. 446,572
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **8 Claims**

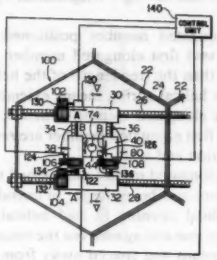


1. A phase change heat storage, light and temperature control building panel comprising a sealed housing having at least two walls transparent to visible light delimiting at least one intermediate space filled with a liquid-solid phase-change heat-storage material wherein said material is a salt mixture comprising from about 10–90% $CaBr_2.6H_2O$, about 90–10% $CaCl_2.6H_2O$ and a neucleating agent, said material being substantially transparent to visible light in solid and in liquid phase, adsorbs heat while melting, releases heat while solidifying and undergoes phase change at a temperature range of from about 5°–28° C.

4,498,460
SOLAR COLLECTOR

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Dec. 27, 1983, Ser. No. 566,062
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—440 7 Claims



1. In a solar collector having a lens for converging sunlight and a fiber optic cable having a light receiving end located at a focal point of the lens, the sunlight converged by the lens being guided by the fiber optical cable to a preselected location, the combination comprising:

a support block for supporting said fiber optical cable;

first positioning means on said support block for moving the light receiving end of the fiber optic cable along the optical axis of the lens;

said first positioning means comprising a through bore formed in the support block, a holder member for holding an end portion of the fiber optical cable which is adjacent to the light receiving end, a recess extending axially in one of the wall of said through bore and an outer peripheral surface of said holder member, a lug formed on the other of the wall of the through bore and the outer peripheral surface of the holder member to be engaged in said recess, a thread formed in an outer periphery of the holder member, and a first gear element engaged with said thread at an inner peripheral surface thereof, and having teeth formed in an outer peripheral surface thereof, the fiber optical cable being movable along an axis of the through bore through said first gear element;

second positioning means for positioning the support block in two different directions which are perpendicular to the optical axis of the lens and to each other, said second positioning means comprising threaded guide rods which extend perpencidular to the optical axis of the lens and to each other, and second gear elements respectively held in threaded engagement with said guide rods, the support block being movable along the threaded guide rods through said second gear elements;

first drive means including a motor for driving said first gear element of the first positioning means; and

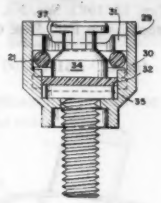
second drive means including motors for driving said second gear elements of the second positioning means;

whereby the light receiving end of the fiber optical cable is movable along said optical axis and in two directions perpendicular to each other and perpendicular to said optical axis by the motors of said first and second drive means to thereby cause the light receiving end of the fiber optic cable to coincide with the focal point of the lens.

4,498,461
COUPLING TO A BONE-ANCHORED HEARING AID

Bo Hakansson, Sanatoriegatan 27, Göteborg, Sweden (416 53)

PCT No. PCT/SE82/00411, § 371 Date Jul. 26, 1983, § 102(e) Date Jul. 26, 1983, PCT Pub. No. WO83/02047, PCT Pub. Date Jun. 9, 1983
PCT Filed Dec. 1, 1982, Ser. No. 522,161
Claims priority, application Sweden, Dec. 1, 1981, 8107161
Int. Cl.[3] H04R *25/00;* A61F *1/24*
U.S. Cl. 128—1 R 3 Claims

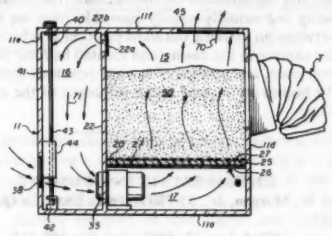


1. Coupling, primarily intended for mechanical transmission of sound information from a vibration generating apparatus such as a transducer (8) to the skull of a hearing impaired person, comprising a first coupling part (5,9,29,39,52), tightly anchored in the skull, and a second coupling part (7,17,38,62) attachable to said first part and arranged at the transducer (8), so that at least one vibration transmitting surface is formed between the coupling parts, wherein the vibration transmitting surfaces (18,50) are located inside the outer surface (20) of the first coupling part (9,29,39,52), and said first coupling part (9,29,39,52) is disposed in such a way that the outer surface thereof (20) is located essentially at the same level as the outer surface (22) of the skull.

4,498,462
FLUIDIZED BED THERAPY APPARATUS

Ernest J. Henley, 359 Westminister Dr., Houston, Tex. 77024

Filed Nov. 5, 1981, Ser. No. 318,376
Int. Cl.[3] A61H *29/00*
U.S. Cl. 128—24.1 10 Claims



7. Apparatus for therapeutic massage of parts of the human body comprising:

a. a cabinet;

b. a chamber in said cabinet having a bottom wall and side walls together defining a space wherein said bottom wall forms a distributor, a mass of solid particles contained in said space to constitute a bed in which the body part may be immersed;

c. means to force gas upwardly through the distributor to create and maintain an ebullient condition of the particles;

d. a tubular member through which the body part may be passed for immersion in the bed;

e. means to conduct the gas from the chamber after it has passed through the mass of particles and recirculate it through said distributor;

f. conducting means to conduct fresh gas for circulation upwardly through the distributor; and

g. means to regulate the amount of fresh gas received from said conducting means.

4,498,463

MASSAGE APPARATUS

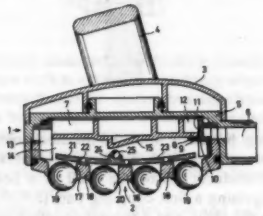
Helmut Roming, Linberg 27, D-7230 Schramberg 11, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,148

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 3101538

Int. Cl.³ A61H *1/00*

U.S. Cl. 128—37 **18 Claims**



1. A massage apparatus comprising:

a casing having a water turbine therein, the turbine being rotatable about an axis, the casing having means for attachment to a supply of water, the casing having a working surface and the working surface having a plurality of openings therein arranged laterally around said axis;

a drive mechanism within the casing, the drive mechanism rotating the water turbine by water supplied to the casing, the turbine having at least one eccentric projection directed toward the working surface;

a movable transmission plate between the water turbine and the working surface for transmitting an axial movement produced by the eccentric projection; and,

a plurality of massage bodies movably mounted at the openings in the working surface and arranged around the axis defined by rotation of the turbine, the massage bodies being individually axially movable over an axial stroke between an extreme outward position at which the bodies are captive in the casing and located beyond the transmission plate, and a range of inward positions through which the bodies are moved under influence of the transmission plate.

4,498,464

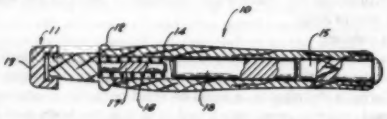
CHIROPRACTIC INSTRUMENT

Darrell W. Morgan, Jr., 53-780 Avenida Diaz, La Quinta, Calif. 92253

Filed Jun. 21, 1982, Ser. No. 390,235

Int. Cl.³ A61N *23/00*

U.S. Cl. 128—54 **7 Claims**



1. A chiropractic instrument for adjusting a patient's spine by striking the instrument against the vertebrae of the spine, said instrument comprising:

an elongated body piece having a striking end and a second end;

a longitudinal bore formed axially in said elongated body piece, said bore having a first termination end wall near said striking end at one end of the bore and having a second termination end wall near the second end at the other end;

helical spring means having a first end and a second end, said helical spring means being positioned in said bore, said helical spring means having its first end resting against the first termination end wall and said spring means being positioned with its outer surface near the inner surface of the bore and having a longitudinal opening along its center;

a first elongated member positioned within said spring means, said first elongated member being longitudinally shorter than the free length of the helical spring means so that the helical spring means extends beyond the end of the first elongated member when both the spring means and the first elongated member are resting against the first termination end wall;

a second elongated means, unattached to any portion of the instrument and being larger in outside diameter than the longitudinal opening in said helical spring means, and resting at one end against the the second end of the helical spring means and spaced away from said first elongated member when the instrument is at rest, said second elongated means being longitudinally moveable within said longitudinal bore and being held completely within said bore; and

a blunt striking foot located at the striking end of the device whereby when the device is struck against a patient's spine, the second elongated means compresses the helical spring means by inertia and strikes the end of the first elongated means transmitting energy to the striking foot.

4,498,465

ERECTILE PROSTHESIS

Glenn E. Hagen, New Orleans, La., assignor to Hagen Medical Equipment Corporation, Carson City, Nev.

Filed Jun. 7, 1982, Ser. No. 385,446

Int. Cl.³ A61F *5/42*

U.S. Cl. 128—79 **3 Claims**

4a

1. A plastic surgery procedure for adapting a human penis to an erectile prosthesis comprising the step of:

gathering all available loose skin of a circumcised patient on the top of the penis by pulling it forward into a nap just behind the glans deferens,

slitting the nap longitudinally along the length of the penis by cutting both layers of skin,

stitching the cut layers of skin so as to form two flaps of skin,

laying down said flaps of skin, to produce extra slack skin on the bottom of the penis,

pulling forward the extra loose skin created at the bottom of the penis, somewhat beyond the head of the penis,

stretching this new extra loose skin, so it is stretched vertically, slitting the new nap of skin horizontally, stitching the slit skin to form a pocket capable of receiving the head of the prosthetic device.

4,498,466

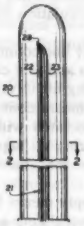
RECLOSABLE CONDOM HAVING SEALED CHAMBERS WITH A RHEOPEXIC MATERIAL WITHIN

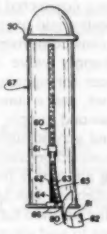
Mark L. Pomeranz, 9760 Viceroy Dr. E., Jacksonville, Fla. 32217

Continuation-in-part of Ser. No. 388,107, Jun. 15, 1982, Pat. No. 4,432,357. This application May 2, 1983, Ser. No. 490,450

Int. Cl.³ A61F 5/00

U.S. Cl. 128—79 21 Claims





1. A condom comprising:

an elongated generally tubular member of thin, flexible material;

an elongated opening provided along at least a substantial portion of the length of said elongated tubular member so as to facilitate placing said elongated tubular member over a flaccid penis;

said elongated tubular member having an open base end and a closed, continuous, substantially smooth head end portion at the end thereof opposite said open end, said closed head end portion being adapted to cover a head portion of a penis and to contain ejaculated spermatozoa; and

means for closing said elongated opening after placing of said condom on a flaccid penis.

4,498,467

ORTHOPEDIC CAST, DEVICE AND METHOD FOR FORMING SAME AND PACKAGE THEREFOR

Harold B. Kirkpatrick, 349 Silver Hill Rd., Easton, Conn. 06612; Fred A. Ravreby, 56 Knight Rd. Extension, Framingham, Mass. 01701, and Henry L. Richbourg, Statesville, N.C., assignors to H. B. Kirkpatrick, Easton, Conn. and F. A. Ravreby, Framingham, Mass.

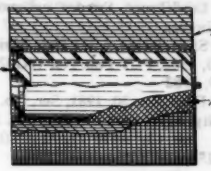
Filed Jan. 20, 1982, Ser. No. 341,190

Int. Cl.³ A61F 5/04

U.S. Cl. 128—90 47 Claims

1. A device for forming an orthopedic cast comprising:

a fibrous porous tape rolled about a core, said tape being impregnated with a first liquid component of a two-component hardenable system; said core being composed of a sealed liquid impermeable pressure rupturable container and having therein a second component of said two-component hardenable system in liquid form which, on intermixing with said first component, reacts to form a hard resin at ambient temperatures; said tape and core being encased in a flexible package adapted to serve as a mixing chamber for intermixing the first and second components



upon the application of pressure to said package sufficient to rupture the core.

4,498,468

BONE FIXATION DRIVING INSTRUMENT

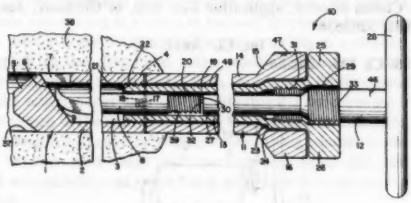
Lars I. Hansson, Norra Promenaden 13, S-222 40 Lund, Sweden

Filed May 10, 1982, Ser. No. 376,682

Claims priority, application Sweden, May 11, 1981, 8102929

Int. Cl.³ A61F 5/04; A61C 8/00

U.S. Cl. 128—92 B 6 Claims



1. A device for the fixation of bone fragments, comprising:

a sleeve having a terminal end for inserting in a predrilled passage formed in a bone and having a side opening formed in said terminal end;

a pin slidably received in said sleeve and having an end portion adapted to be forced into a bone fragment and an opposite end provided with external threads for use in extracting said pin;

means connected to said sleeve for driving said end portion of said pin out of said sleeve through said side opening and into surrounding bone material;

means detachably connected to said sleeve for rotating said sleeve in said predrilled passage, said rotating means including means for indicating the orientation of said side opening; and

a pin extractor means comprising an extractor sleeve having internal threads for mating with said pin threads, and a free end surface for engagement with said first mentioned sleeve when said internal threads are screwed onto said external threads whereby, by screwing said extractor sleeve onto said pin, said pin end portion is pulled back into said first mentioned sleeve.

4,498,469

EAR PLUG AS WELL AS A METHOD AND APPARATUS FOR THE PRODUCTION THEREOF

Kalman Csiki, Landskrona, Sweden, assignor to Gullfiber AB, Billesholm, Sweden

PCT No. PCT/SE81/00283, § 371 Date May 20, 1982, § 102(e) Date May 20, 1982, PCT Pub. No. WO82/01312, PCT Pub. Date Apr. 29, 1982

PCT Filed Sep. 30, 1981, Ser. No. 403,657

Claims priority, application Sweden, Oct. 22, 1980, 8007422

Int. Cl.³ A61F *11/00, 11/02*

U.S. Cl. 128—152 **13 Claims**

1. An ear plug intended for insertion in the auditory meatus of an ear including an elongate body of elastic material surrounded by a sheath of flexible plastics material characterized in that the sheath is a deep-drawn thermoplastic plastics film or foil which has portions that are thinner than the original film or foil thickness.

4,498,470

RESPIRATOR HAVING CIRCULATING BREATHING GAS

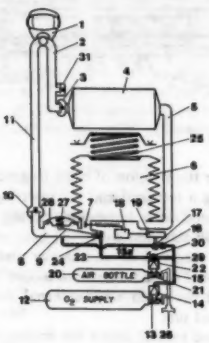
Ernst Warncke, Lubeck, Fed. Rep. of Germany, assignor to Drägerwerk AG, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,335

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202638

Int. Cl.³ A62B *7/04*

U.S. Cl. 128—202.26 **5 Claims**



1. A respirator comprising:

a closed respiratory gas circulation line having a connection for a user;

a regenerator cartridge in said circulation line for regenerating respiratory gas passing through said cartridge;

a breathing bag connected to said circulation line for receiving and discharging respiratory gas from and to said circulation line;

spring means engaged with said breathing bag for biasing said breathing bag to increase a pressure of respiratory gas in said circulation line above an ambient pressure outside said circulation line;

an oxygen container for containing pressurized oxygen;

an oxygen supply line connected between said oxygen container and said circulation line;

a controllable oxygen valve in said oxygen supply line;

oxygen level control means having an oxygen sensor for sensing an oxygen level in said circulation line and connected to said controllable oxygen valve for controlling said oxygen valve to maintain a selected oxygen level in said circulation line;

equalizing air supply means for supplying pressurized equalizing air to said circulation line when a pressure of respiratory gas in said circulation line falls below a selected pressure level;

an equalizing air supply line connected between said equalizing air supply means and said circulation line for carrying pressurized equalizing air to said circulation line;

lung-controlled valve means connected to said equalizing air supply line and associated with said circulation line for opening said equalizing air supply line when pressure in said circulating line falls below said selected pressure level;

said equalizing air supply means having a capacity for supplying pressurized equalizing air which is less than a capacity of said oxygen container for containing pressurized oxygen;

said supply valve being connected to said oxygen container for opening and closing said oxygen container, said equalizing air supply means comprising a compressed air container, a second supply valve connected to said compressed air container for opening and closing said compressed air container, and a common actuator connected to said first and second supply valves for opening and closing said first and second supply valves together; and

a connection line connected between said oxygen supply line and said equalizing air supply line, a selector valve connected to said connecting line and equalizing air supply line and having a first position for connecting said equalizing air supply means to said circulation line while disconnecting said equalizing air supply line from said oxygen supply line and a second position connecting said equalizing air supply means to said equalizing air supply line while disconnecting said equalizing air supply means from said circulation line.

4,498,471

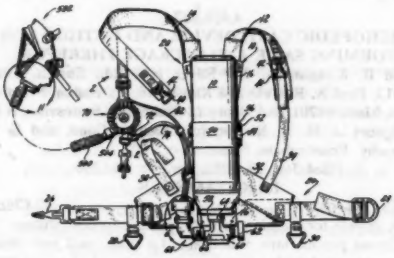
FIRST AND SECOND STAGE REGULATOR SYSTEM FOR BREATHING GAS

Max L. Kranz, La Habra, and Donald L. Gadberry, Huntington Beach, both of Calif., assignors to U.S.D. Corp., Santa Ana, Calif.

Filed Sep. 28, 1982, Ser. No. 425,405

Int. Cl.³ A62B *7/04*

U.S. Cl. 128—204.26 **29 Claims**



1. A breathing gas regulator comprising:

a housing having an inlet adapted to be connected to a source of pressure, and an outlet;

a first piston having first and second ends and slidably mounted in said housing, a chamber in said first piston

between said ends, a first passage extending at least partially through said first piston from said first end thereof to said chamber;

first valve means operatively connected to said first end of said first piston for controlling gas through said inlet from said source of pressure, through said first passage, and into said chamber;

a second piston having first and second ends and slidably mounted in said first piston, a second passage means extending through said second piston from said first end to said second end, second valve means operatively connected to said first end of said second piston for controlling gas from said chamber through said second passage means;

said second ends of said first and second pistons having surfaces fluidically communicating with said outlet thereby being subjected to outlet pressure;

first spring biasing means for biasing said first piston away from said inlet to regulate gas flow by said first valving means from said source of pressure through said inlet and then to said outlet; and,

second spring biasing means for biasing said second piston within said first piston away from said chamber to maintain said second valve means open until said first piston fails to regulate gas from said source of pressure whereupon said second piston is operated to regulate gas from said source of pressure.

4,498,472

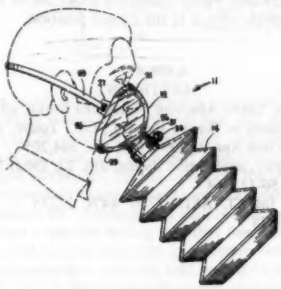
SMOKE MASK

John S. Tanaka, 1080 Siskiyou Dr., Menlo Park, Calif. 94025

Filed Jan. 27, 1983, Ser. No. 461,625

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—205.17 **4 Claims**



1. A protective breathing apparatus comprising,

a face-fitting nose and mouth face mask made of gas-impermeable material having a first air passage port, said first air passage port being the sole opening to and from said mask,

a vessel having an expandible second air passage port, said second air passage port being the sole opening to and from said vessel, said vessel having a capacity, when fully expanded, of at least 60 cubic inches, said vessel made of a substantially non-porous, gas impermeable material and having a lengthwise axis with a collapsed first position and an expanded second position, said vessel having pleats compressible in the direction of said lengthwise axis and capable of retaining said vessel in said expanded position when manually extended to allow for a capacity of at least 60 cubic inches of ambient air, and

a common air passageway between the face mask and vessel created by the joining of said first port and second port.

4,498,473

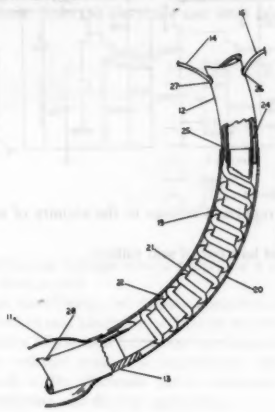
VARIABLE STIFFNESS TRACHEAL TUBE

Gordon A. Gereg, 159 Saw Pit Hill Rd., Woodbury, Conn. 06798

Filed Dec. 7, 1982, Ser. No. 432,568

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—207.15 **4 Claims**



1. A catheter comprising semirigid tubular proximal and distal ends interconnected by a flexible tubular intermediate portion, said intermediate portion further including an inner tube and an outer tube coaxially spaced from each other to form a lumen, said lumen having within it a small tube contacting the inner tube and outer tube and connecting the distal and proximal tubes providing an air passage between same and taking a helical path, said air passage continuing into both the proximal and distal end tubes through a lumen in the wall of each tube and exiting at a notch in the wall thereby connecting on the proximal end to an extending tube ending in a closure, said notch in the distal end being positioned under a thin walled cuff sealed to the distal tube, said lumen being closed after the notch under said cuff, said proximal tube having a second lumen in the wall also having a notch and an extending tube ending in a closure providing a connecting passage to the space between said outer and inner coaxial tubes and said helical wound tube, said space being an airtight helix by way of bonding.

4,498,474

EPILATION METHOD

Edward Chalmers, 31 Benjamin Rd., Arlington, Mass. 02174, and William H. Huggins, 26 Heritage Cir., Clinton, Conn. 06413

Continuation-in-part of Ser. No. 344,494, Feb. 1, 1982, abandoned, which is a continuation of Ser. No. 42,799, May 29, 1979, Pat. No. 4,317,450. This application Mar. 25, 1982, Ser. No. 361,630

Int. Cl.³ A61B *17/41*

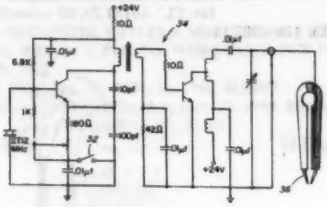
U.S. Cl. 128—303.13 **22 Claims**

1. A method of removing a hair from a living being comprising the steps of:

applying a fluid having ionic activity and wetting characteristics for hair and surrounding skin, to the hair and surrounding skin,

said fluid having an ionic activity equivalent to at least about 25 ppm sodium chloride in water solution,

allowing said ionic, wetting fluid to penetrate into the follicle containing said hair,



applying a regulated voltage to the vicinity of said wetted hair, and

drawing said hair out of said follicle.

4,498,475

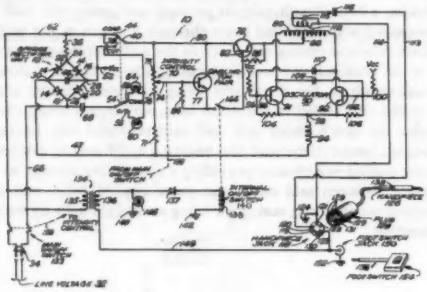
ELECTROSURGICAL UNIT

Max Schneiderman, Clifton, N.J., assignor to Ipco Corporation, White Plains, N.Y.

Filed Aug. 27, 1982, Ser. No. 412,230

Int. Cl.³ A61B *17/39*

U.S. Cl. 128—303.14 **19 Claims**



1. An electrosurgical unit for producing from a power source a modulated oscillating signal for coagulation procedures and an unmodulated oscillating signal for cutting procedures, comprising:

a four-arm bridge rectifier having two pairs of diagonally opposing terminals, means for directly coupling a first pair of said opposing terminals to the power source, filter means coupled across said other pair of said opposing terminals for smoothing the signal at said opposing terminals, cutting signal output means coupled across said other pair of said opposing terminals and producing a fixed level signal, coagulation signal output means coupled across one arm of said bridge rectifier, and producing a modulating signal;

oscillation means for producing an oscillating output signal at a given frequency; and

switching means for selectively coupling one of said output means directly to said oscillation means to selectively provide the signals from the oscillation means to thereby produce an unmodulated and a modulated signal.

4,498,476

NON-METALLIC, BIO-COMPATIBLE HEMOSTATIC CLIPS WITH INTERLOCKING LATCH MEANS

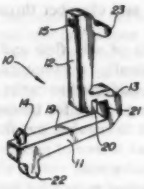
Robert J. Cerwin, Pittstown, N.J.; Madhusudan Joshi, E. Aurora, N.Y.; John R. Menges, Woodbridge, N.J.; Robert W. Mericle, Lebanon, N.J., and William J. Zwaskis, Carteret, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 296,672, Aug. 27, 1981, Pat. No. 4,449,531.

This application Nov. 17, 1983, Ser. No. 552,638

Int. Cl.³ A61B *17/00, 17/12*

U.S. Cl. 128—346 **5 Claims**



1. A hemostatic clip comprising first and second leg members, each member having an elongated vessel clamping inner face in opposition to a vessel clamping inner face of the other leg member, said first leg member terminating at its proximal end in a bend forming a hooked member extending from said vessel clamping inner face, said second leg member terminating at its proximal end in a configuration adapted for engagement by said hooked member of said first leg member, hinge means joining said first and second leg members adjacent said proximal ends, said first and second leg members being rotatable about said hinge means from an open position to a closed position, said leg members terminating at their distal ends in latch means including means for preventing relative lateral movement between vessel clamping inner faces of the leg members when the clip is in the closed position.

4,498,477

MATTRESS

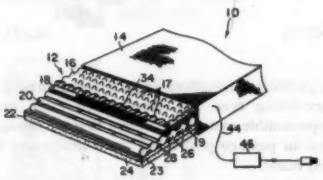
Teruo Masuda; Takeo Abe, and Matsuhiro Koike, all of Tokyo, Japan, assignors to France Bed Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,205

Claims priority, application Japan, Jul. 22, 1981, 56-108690; Jul. 29, 1981, 56-112464

Int. Cl.³ A61N *1/40;* A47C *27/16*

U.S. Cl. 128—378 **13 Claims**



1. A mattress comprising:

an upper layer formed of foamed plastic capable of being deformed by compressive load and restored, and said upper layer having a number of projections formed integrally on the top surface thereof;

a lower layer formed plastic capable of being deformed by compressive load and restored;

a hygroscopic layer formed of a highly hygroscopic material and underlying the upper layer;

a middle layer having a number of columnar core members formed of relatively hard foamed plastic and interposed

between the hygroscopic layer and the lower layer, the core members of the middle layer being arranged parallel to and spaced from each other and formed integrally with coupling portions therebetween so as to define upper elongated spaces between adjacent core members and between the middle and hygroscopic layers and lower elongated spaces between adjacent core members and between the middle and lower layers, said coupling portions having communication passages formed therein through which the upper and lower spaces are in air communication with each other;

and

an air permeable outer covering which covers the upper, hygroscopic, middle, and lower layers;

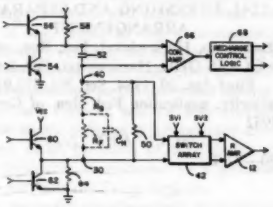
said upper and lower elongated spaces extending to said outer covering so as to be in air communication with said outer covering, whereby moist air in said upper and lower spaces permeates to the outside through said outer covering.

4,498,478

APPARATUS FOR REDUCING POLARIZATION POTENTIALS IN A PACEMAKER

Ivan M. Bourgeois, Thimister, Belgium, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 13, 1982, Ser. No. 417,256
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **16 Claims**



1. In a heart stimulator having a source of supply voltage, timing circuit means for providing first and second time intervals, a pair of output electrodes for applying a stimulating pulse to heart tissue, and an output capacitor coupled to one of said output electrodes, the improvement for attenuating polarization currents/voltages at said output electrodes comprising:

first means for coupling said supply voltage source to said output capacitor during said first time interval for charging said output capacitor to a certain voltage;

second means for coupling said output capacitor to both of said output terminals during said second time interval to discharge said output capacitor voltage into, and thereby stimulate heart tissue; and

resistor means coupled across said output electrodes for providing a current path for the discharging of the effective capacitance of previously stimulated heart tissue and the charging of said output capacitor during said first time interval, said resistor means having a resistance sufficiently low to discharge said effective capacitance.

4,498,479

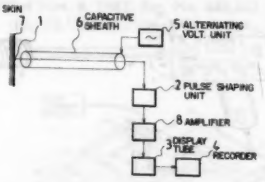
ELECTROCARDIOGRAPH (ECG) ELECTRODE TESTING SYSTEM

Asko Martio, Espoo; Ilpo Reitmaa, Kaipola, and Esa Lautamo, Espoo, all of Finland, assignors to Kone Oy, Helsinki, Finland

Filed Jun. 24, 1982, Ser. No. 391,950
Claims priority, application Finland, Jun. 24, 1981, 811978
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—639 **4 Claims**

1. A system for testing the attachment of an ECG electrode intended to be used in connection with an electrode monitoring the function of the heart, muscles or other human organs to indicate detachment of the electrode from its fixing base on the human skin, said system comprising:

an ECG electrode having a fixing base for connecting the electrode to the skin of a patient, wherein the electrode comprises a conductive capacitive sheath electrically insulated from the electrode and from said fixing base;



an alternating voltage source supplying a signal voltage to the sheath; and

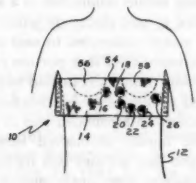
voltage monitoring and display apparatus electrically connected to said electrode, so that on any detachment of the electrode from said fixing base an alternating voltage from said voltage source is immediately induced from the sheath to the electrode and is displayed in said voltage monitoring and display apparatus.

4,498,480

ADJUSTABLE PROBE BELT ASSEMBLY

John L. Mortensen, 270 Elm St., Windsor Locks, Conn. 06096

Filed Jul. 1, 1983, Ser. No. 510,261
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—644 **16 Claims**



1. An adjustable probe belt assembly for hooking up a patient to an electrocardiograph, said assembly comprising:

(a) a sheet of material having a pocket at each end with a weight inside, wherein said sheet is adapted in length to fit across the chest of a patient with the weights draped over the patient's sides and said sheet has a plurality of spaced grommets for housing detachable electrodes;

(b) a plurality of electrodes respectively mounted within said grommets for eccentric rotation therein: and,

(c) wherein each electrode includes a lower portion on one side of said sheet for contacting the patient's skin and an upper portion on the other side of the sheet for adjusting the location of the patient-contacting portion on the patient's chest, said electrode's lower portion comprising a metal disk with an undersurface for contacting the patient and an eccentrically mounted post that extends perpendicularly from the top surface of the disk toward the grommet in which the electrode is mounted, said post having a channel for removably receiving a stem of said upper electrode portion, said upper portion having a rotator arm on the opposite side of said sheet from said disk, wherein said arm is integral with a stem that fits through a hole in said grommet and into the channel of said post, whereby said electrodes can each be eccentrically rotated through a wide arc by turning their arms to quickly adjust the disks to fit the particular patient's chest size.

4,498,481

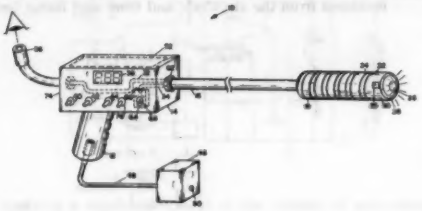
ESTRUS CYCLE MONITORING SYSTEM

Judith K. Lemke, 4263 170th St. E., Rosemount, Minn. 55068

Filed Sep. 28, 1982, Ser. No. 425,893

Int. Cl.³ A61B *5/05*

U.S. Cl. 128—734 **8 Claims**



1. Estrus cycle monitoring system for determining the preferred ovulation time of a female animal or female human, said system comprising:

a. pistol-grip handle means having a flat upper surface;

b. electronic housing means secured to said flat upper surface of said handle means;

c. elongated rod secured to a forward end of said housing means, a molded rounded end probe sized for a respective animal and supporting two wound geometrically configured helix electrodes on an outer circumference of said probe, said probe including a cylindrical shape with a rounded end, said helix electrodes being longitudinally wound at an axis at an angle to said axis of said probe and rod, said probe secured to an end of said rod, wires running between said electrodes through said rod;

d. signal processing means connected to a signal generating means connected to said electrode wires;

e. signal display means connected to said signal processing means and positioned on a rear portion of said housing;

f. light source means positioned in said housing means, objective lens and diffuser lens surrounding said objective lens and positioned on a rounded end of said probe, random fiber-optic bundle connected between said light source means and said diffuser lens including a covering thereabouts; coherent fiber-optic bundle extending from said objective lens, through said random fiber bundle, through said housing means, through said rear end of said housing means, and an eye-imaging optic connected to an end of said coherent fiberoptic bundle for observing the surrounding vaginal cabity and related anatomy of location of said probe; and,

g. power means connected through a flexible cable to said housing means whereby said electrodes and electrical generating means and signal processing means display on said display means electrical resistance of mucus in a vaginal cavity of a female animal or human.

4,498,482

TRANSVENOUS PACING LEAD HAVING IMPROVED STYLET

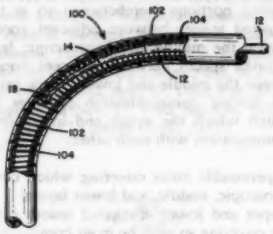
Terrell M. Williams, Coon Rapids, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 296,740, Aug. 27, 1981, abandoned, which is a continuation of Ser. No. 103,249, Dec. 13, 1979, abandoned. This application Jul. 28, 1983, Ser. No. 518,278

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—786 **8 Claims**

1. In a transvenous pacing lead of the type having a wound coil surrounded by insulation and a stylet, removably insertable in said pacing lead, an improvement wherein said stylet is provided with first means for allowing easy control around bends and curves of said transvenous pacing lead, and is provided with second means coupled to said first allowing means



for preventing said stylet from violating said wound coil or protruding through said insulation.

4,498,483

AXIAL THRESHING AND SEPARATING ARRANGEMENT

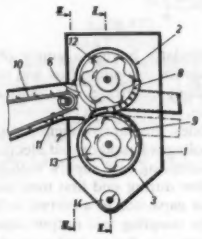
Johannes Dammann, Harsewinkel, Fed. Rep. of Germany, assignor to CLAAS OHG, Harsewinkel, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,925

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1983, 3303952

Int. Cl.³ A01F *12/18*

U.S. Cl. 130—27 T **3 Claims**



1. An axial threshing and separating arrangement located in a housing, comprising two threshing drums rotatable about parallel axes of rotation; and two casing units each circumferentially surrounding a respective one of said threshing drums with retaining a small gap, each of said casing units being subdivided into a thresh basket and a sieve and said thresh basket being provided with a product supply opening at its one end and with a product discharge opening at its another end, said thresh basket and sieve forming casing unit being arranged relative to one another so that the distance between said axes of rotation of said threshing drums corresponds to the diameter of one of said thresh basket-sieve casing units, and said thresh basket-sieve casing units overlap with their ends in a product supply region by substantially a double width of each product supply opening, said thresh basket-sieve forming casing units being arranged over one another and said product supply openings being located adjacent to one another in an upright direction.

4,498,484

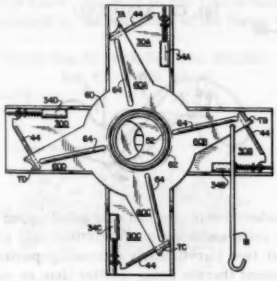
TOBACCO STRIPPER

Jerald G. Gilbert, Rte. 9, Box 352B, London, Ky. 40741

Filed Jul. 21, 1982, Ser. No. 400,235

Int. Cl.³ A01D *1/00*

U.S. Cl. 130—30 R **12 Claims**



1. A blade assembly for stripping leaves from a substantially circular plant stalk comprising:

blade guide means including four channel sections defining a cruciform shape and extending outwardly from a central opening adapted for passing said stalk therethrough as said leaves are stripped;

a stripper blade disposed in each of said channel sections for reciprocating movement with respect to said central opening, each of said blades having a substantially circular aperture therein overlying said central opening and superimposed with respect to the respective circular apertures of the other blades and an outboard end having an actuating cam surface thereon, said circular apertures of said blades collectively defining a substantially circular stripper opening in all positions of said blades, the size of which is adjustable in response to a mechanical force applied to said actuating cam surfaces;

blade pusher means for simultaneously engaging said actuating cam surfaces for applying said mechanical force thereto to move said blades outwardly in said channel sections and thereby enlarge said stripper opening defined by said blade apertures; and

spring tension means for yieldably biasing said blades toward said central opening to positions defining a minimum size stripper opening.

4,498,485

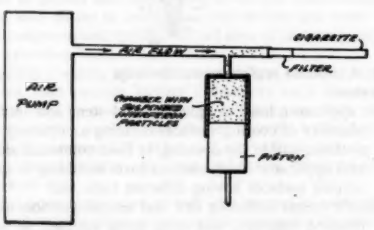
INTERFERON AND INTERFERON INDUCERS COMBINED WITH TOBACCO PRODUCTS

William A. Carter, Birchrunville, Pa., assignor to Hem-Sub, Inc., Philadelphia, Pa.

Filed Aug. 5, 1982, Ser. No. 386,447

Int. Cl.³ A24B *15/20, 15/30*

U.S. Cl. 131—331 **32 Claims**



1. A process of medicating a smokable tobacco product comprising exogenously adding interferon or biologically active fragments thereof to said product.

4,498,486

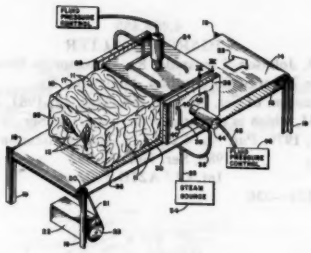
TOBACCO BALE STEAM INJECTION

Robert N. Smith, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 9, 1982, Ser. No. 440,463

Int. Cl.³ A24B *3/02, 3/12, 1/02*

U.S. Cl. 131—300 **5 Claims**



1. A tobacco bale steam injection device comprising:

at least one injection plate, each having a plurality of orifices formed in a substantially flat surface thereof;

means for urging said surface of said at least one injection plate in flush contact with a corresponding at least one side of a bale of tobacco; and,

means for supplying pressurized steam to said plate so that said steam is fed to said plurality of orifices to discharge therefrom at said surface and into said corresponding side of said bale.

4,498,487

ROD-LIKE SMOKING ARTICLE WITH SECONDARY AIR CHANNELS AND APPARATUS FOR PRODUCING SUCH AN ARTICLE

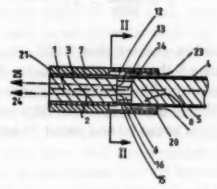
Antonio P. A. Frattolillo, Neuchatel, Switzerland, assignor to Fabriques de Tabac Reunies, S.A., Neuchatel, Switzerland

Filed Feb. 12, 1982, Ser. No. 348,571

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105456

Int. Cl.³ A24D *3/04*

U.S. Cl. 131—336 **5 Claims**



1. A rod-like smoking article comprising:

a tobacco rod,

a covering paper surrounding said tobacco rod,

a rod-like mouthpiece core positioned at an end of said tobacco rod,

an air-tight adhered wrapping paper having a mouth end and a tobacco rod end and enveloping the entire periphery of said mouthpiece core and at the tobacco rod end thereof further enveloping the entire periphery of a piece of said tobacco rod and having a plurality of notches on the inside surface thereof, said notches extending from said tobacco rod end of the wrapping paper and terminating at a dis-

tance from the mouth end of said wrapping paper and forming a plurality of secondary air channels having at the tobacco rod end of said wrapping paper a corresponding plurality of inlets for the entry of sucked-in secondary air into the channels, the channels at the mouth end being blocked by the wrapping paper being adhered to the mouthpiece core and the channels issuing into at least one gap between the mouthpiece core and the tobacco rod end and between at least one pair of filter sections of the mouthpiece core.

4,498,488

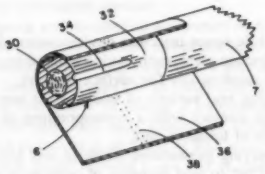
CIGARETTE FILTER

Robert R. Johnson, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation of Ser. No. 243,168, Mar. 12, 1981, Pat. No. 4,365,641, which is a continuation-in-part of Ser. No. 29,230, Apr. 11, 1979, Pat. No. 4,256,122. This application Dec. 21, 1980, Ser. No. 451,892

Int. Cl.³ A24D *3/04*

U.S. Cl. 131—336 **9 Claims**



1. A filter cigarette whose filter comprises a porous plug affixed to the end of a cigarette for drawing smoke from the cigarette through the plug, and a plurality of between three and seven ventilating air ducts positioned and distributed circumambiently around said plug, each of said ducts having an air egress opening at the mouth end of the filter and having an air ingress opening exteriorly of the filter cigarette located remote from said end along the filter, whereby ventilating air can flow from said ingress openings through said ducts to said egress openings, said filter being additionally characterized by the equation:

$$K = \frac{UA_f}{100n} - A_v$$

wherein K is a number greater than 0.035, A_v is the average cross-sectional area of the individual ducts, A_f is the total cross-sectional area of the filter, n is the number of ducts and U is the percent ventilation air for the total flow rate through the filter which is between about 60 and about 95 and is defined by the equation:

$$U = \frac{100q_v}{q_v + q_s}$$

wherein q_v is the total flow rate through the ducts and q_s is the flow rate through the plug, and wherein the filter is further characterized by the equation:

$$A_v/A_f \leq 0.01$$

whereby substantial dispersion of the smoke drawn through the filter is obtained within about a one centimeter distance from the end of the filter when drawn at the rate of 17.5 cc./sec.

4,498,489

HAIR CURLER

Heinz K. Bornhauser, Zwinglistrasse 21, 9000 St. Gallen, Switzerland

Continuation of Ser. No. 337,905, Jan. 7, 1982, abandoned. This application Nov. 1, 1983, Ser. No. 548,020

Claims priority, application Switzerland, Jan. 16, 1981, 286/81

Int. Cl.³ A45D *2/00*

U.S. Cl. 132—40 **5 Claims**

1. A hair curler, comprising: an elongated curler body having a circular cross-sectional configuration, said curler body having at least two curvilinearly extending portions with a longitudinal extent thereof being shorter than or equal to the cross-sectional diameter of the curler, longitudinal planes of said curvilinearly extending portions intersect each other at an angle of approximately ninety degrees, said successive curvilinearly extending portions differ regarding their direction of curvature; and at least one rectilinearly extending portion arranged intermediate said curvilinearly extending portions is such manner that said curvilinearly extending portions extend away from said rectilinearly extending portion.

4,498,490

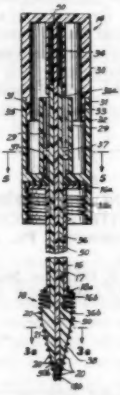
ADJUSTABLE PRODUCT APPLICATOR

David Seidler, Forest Hills, N.Y., assignor to Max Factor & Co., Hollywood, Calif.

Filed Jul. 23, 1982, Ser. No. 401,068

Int. Cl.³ A45D *40/30*

U.S. Cl. 132—88.5 **7 Claims**



1. A product applicator comprising:

a stem;

an applicator head coupled to said stem and including a plurality of coating surfaces defining an opening;

a platform within the opening, in fluid communication with said applicator head, said platform including at least two arcuate surfaces having different radii; and

handle means including first and second portions rotatably coupled together, said stem being coupled to said first portion and said platform being coupled to said second portion, with rotation of said second portion relative to

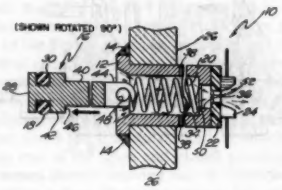
said first portion rotating said platform to bring a selected arcuate surface of said platform into alignment with said coating surfaces.

4,498,491

THERMO-ELECTRIC VALVE

Roger R. Chamberland, Oakdale, and Andrew J. Stanland, Old Lyme, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 8, 1983, Ser. No. 502,030
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—72 **15 Claims**



1. A thermo-electric valve for scuttling buoyant devices comprising:

a cylindrical sleeve, adapted to be inserted through an aperture in a bulkhead separating a pressurized medium in a higher pressure space from a lower pressure space, said sleeve further including a flanged higher pressure end, an internal bore therethrough and a lower pressure end having a surface extending into said bore such that a smaller diameter aperture than said bore is formed thereby providing a lip at the low pressure end of the bore, said low pressure end extending beyond the low pressure surface of said bulkhead;

a piston, slidably insertable into said sleeve bore, said piston further including a cylindrical shaft having a larger diameter head at the end of said piston shaft facing said higher pressure space, said piston head having an annular groove thereabout, and said shaft having a tang on the opposite end thereof, said tang having a circular aperture therethrough;

a compression spring, the outer diameter of which is selected to moveably fit within said sleeve bore, while the inner diameter thereof is selected so as to slip over said piston shaft such that one end of said spring rests against said sleeve lip and the opposite end thereof rests against the face formed by the difference in diameters of said piston shaft and said piston head;

an O-ring, selected so as to mount within said piston head annular groove, for providing an occlusive seal between said piston head diameter and said sleeve bore thereby preventing said pressurized medium from entering said low pressure space;

a rigid, dielectric washer, placed against the exterior surface of said low pressure end of said sleeve, said washer having an aperture therethrough, the diameter of which is selected to permit said piston tang to extend therethrough when said piston is totally inserted within said bore to fully compress said spring, the full area of said tang aperture extending beyond said washer;

a low power resistor, adapted to receive low control circuit current, said resistor having a diameter such that said resistor may be inserted through said tang aperture said resistor resting against said washer thereby holding said spring in compression within said sleeve bore; and

a sealing bead, sealably attaching said sleeve flange to said bulkhead;

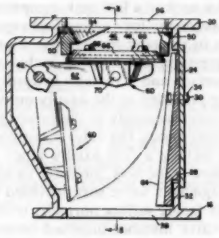
whereby, upon application of said low current to said resistor, said resistor disintegrates thereby releasing the stored energy of said spring whereupon said spring expands and ejects said piston into said higher pressure space thus permitting said pressurized medium to flow through said sleeve bore and said sleeve aperture into said low pressure space.

4,498,492

DUST VALVE AND TRAP

Urgel R. Carpentier, Plattsburgh, N.Y., assignor to Plattsburgh Foundry, Inc., Plattsburgh, N.Y.

Filed Mar. 25, 1982, Ser. No. 361,799
Int. Cl.³ F16K *1/16*
U.S. Cl. 137—315 **5 Claims**



1. A dust valve body having a flow path therethrough from one end to the other;

a conduit member removably mounted in said valve body and forming a valve seat, the flow path through said conduit member being substantially coaxial with the flow path through said valve body, said conduit member being substantially cylindrical and forming said valve seat on a radial internal edge thereof;

a valve actuator shaft passing through said valve body adjacent a side of said valve body and means for rotating said shaft;

a frustro conical valve flap and self aligning means carried thereby for engaging said flap at its frustro conical surface with the radial edge of said seat, said flap removably coupled to said valve actuator shaft for moving into and out of engagement with said valve seat whereby a seal will be maintained between the frustro conical surface of said flap and the radial edge of said seat; means for deflecting the flow through said conduit and said valve body so that when said flap is fully rotated out of engagement with said valve seat said flow will not impinge upon the surface thereof; and access means carried by said valve body for providing access to the interior of said body for removal of said conduit member and said valve flap from inside said valve body;

said conduit member being disposed adjacent the upper portion of said valve body and said valve seat is disposed substantially perpendicular to the vertical longitudinal axis of said valve body;

said means for deflecting the flow includes a semicircular flange disposed within said conduit member opposite said valve seat to deflect the flow towards a further deflecting means comprising a wear plate;

said wear plate disposed adjacent the side of said valve body opposite the valve actuator shaft.

4,498,493

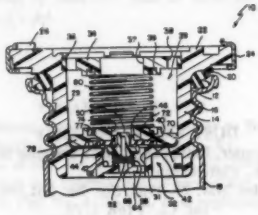
PRESSURE VALVE ASSEMBLY FOR A FUEL TANK FILLER NECK CAP

Robert S. Harris, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Continuation-in-part of Ser. No. 276,880, Jun. 24, 1981, abandoned. This application Aug. 17, 1983, Ser. No. 523,836

Int. Cl.³ F16K *17/196*

U.S. Cl. 137—469 2 Claims



1. A cap for a filler neck of a fuel tank comprising a housing providing a vent passageway for venting fuel vapors out of the tank when pressure in the tank increases to a predetermined superatmospheric pressure, the housing including an axially outwardly facing surface and a radially inwardly facing surface, a vent opening provided in the axially outwardly facing surface, a pressure valve assembly in the housing for controlling the venting of fuel vapor, the valve assembly including a first valve member having a first axially inner surface area exposed to the pressure in the tank, yieldable means urging the first valve member against a valve seat provided by the housing axially outwardly facing surface normally to close the vent opening, a second valve member disposed between the first valve member and the yieldable means for controlling flow of fuel vapors from the tank through the vent passageway, the second valve member including a radially outer surface and a second axially inner surface area encircling the first valve member, the first and second axially inner surface areas providing a combined axially inner surface area that is at least about 350% greater than the first axially inner surface area, the second inner surface area forming a first annular restricted opening with the housing axially outwardly facing surface for the flow of fuel vapor in the vent passageway, the radially outer surface of the second valve member forming a second annular restricted opening with the housing radially inwardly facing surface for the flow of fuel vapor in the vent passageway, the predetermined superatmospheric pressure applying a force to the first axially inner surface area to urge the first valve member in opposition to the yieldable means and open the vent opening to urge the first valve member away from the valve seat, exposure of the combined axially inner surface area to a relatively small pressure increase in the first restricted opening producing a relatively larger force in opposition to the yieldable means to rapidly increase the flow of fuel vapor, the second restricted opening limiting the flow of fuel vapor to maintain a generally constant pressure against the combined axially inner surface area to keep the vent opening open until a safe pressure level below the predetermined superatmospheric level is reached in the tank.

4,498,494

AIR CONTROL FOR A LUMBAR SUPPORT DEVICE

Shigeru Nishio, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

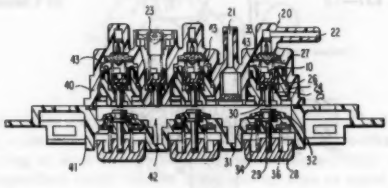
Filed Mar. 29, 1983, Ser. No. 480,176

Claims priority, application Japan, Mar. 31, 1982, 57-046227[U]

Int. Cl.³ F16K *15/06, 15/20*

U.S. Cl. 137—514 2 Claims

1. Air controlled valve assembly or a lumbar support device having at least one air bag located in a seat back comprising a hollow housing, inlet means adapted to be connected to a source of air under pressure for introducing air into said housing, at least one outlet means adapted to be connected to an air bag for supplying air from said hollow housing to said air bag, a valve seat located in said outlet means, a check valve located in said outlet means for movement into and out of engagement with said valve seat, spring means located in said outlet means for normally biasing said check valve into engagement with said valve seat and a spring guide member located in said outlet means intermediate said spring means and said check valve means, said spring guide member having a plurality of spaced



apart projections including an outer circumferential surface disposed in sliding engagement with said outlet means with an oil reservoir groove formed in said outer circumferential surface of each projection for holding a supply of high viscosity oil to dampen the oscillating movement of said guide member and said check valve in response to rapid fluctuations in air pressure wherein said spring guide member is further comprised of a central portion and a plurality of radially extending support members having said projections at the outer end thereof respectively whereby said support members are adapted to engage said spring means.

4,498,495

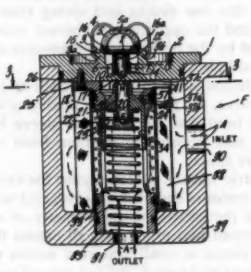
MAGNETIC DIFFERENTIAL PRESSURE VALVE WITH AN INDICATOR SHOWING WHEN VALVE HAS OPENED OR CLOSED

Bryan H. Worwood, and Paul Stallard, both of Clanfield, England, assignors to Pall Corporation, Glen Cove, N.Y.

Filed Aug. 4, 1981, Ser. No. 289,866

Int. Cl.³ F16K *37/00*

U.S. Cl. 137—557 15 Claims



1. A magnetic differential pressure valve having an indicator showing when the valve is moving but before the valve has moved into one of the open and closed positions, comprising a housing including a valve seat; valve means reciprocably mounted in the housing for movement towards and away from the valve seat between open and closed positions; providing a neutral zone in which during valve movement therethrough the valve has moved away from the closed or open position but has not reached the open or closed position, respectively; first magnetic means reciprocably movable with the valve means

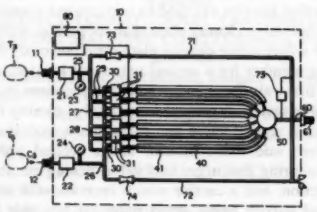
toward and away from the valve seat; first bias means urging the valve means the first magnetic means to move in one direction and normally retaining the valve means and first magnetic means in one of the closed and open positions; first fluid duct means communicating with a source of fluid under pressure and with first and second pressure-receiving surfaces on the valve means to urge it and the first magnetic means in the opposite direction; second fluid duct means communicating with the first fluid duct mens for fluid flow past the valve means only when the valve means has moved a sufficient distance away from the valve seat to be beyond the neutral zone second magnetic means movable toward and away from the first magnetic means and normally retained in a first nonindicating position, reacting with the first magnetic means whenever the two means are spaced a sufficient distance apart to be within their mutually reactive magnetic fields of force, said distance being less than the distance the valve must move to reach one of the closed and open positions; and corresponding to the neutral zone; and second bias means urging the second magnetic means into one of the nonindicating and indicating positions when the first magnetic means has moved to a predetermined distance from the second magnetic means within the neutral zone that is less than the distance at which the valve has moved into one of the open and closed positions, the second magnetic means thereby moving into its nonindicating or indicating position before the valve means has moved into the other of its closed and open positions, and in that position indicating that the valve means is either opening or closing fluid flow communication between the first and second fluid duct means, the first fluid duct means communicating fluid pressure only to the first pressure-receiving surface with the valve in one of the closed and opened positions to urge the valve away from said closed or open positions towards one of the open and closed positions respectively; the second pressure-receiving surface on the valve being exposed to fluid pressure via the first fluid duct means only after the valve has moved away from the closed or open position but while the valve is still in the neutral zone before the valve has moved into one of the open and closed positions; thereby to increase the rate of travel of the valve and ensure movement of the second magnetic means by the second bias means into one of the nonindicating and indicating positions before the valve has moved out from the neutral zone into one of the open and closed positions.

4,498,496

MIXING OF GASEOUS SUBSTANCES

Alessandro Barcellona, Turin; Guido Ferrando Gorin, Cirié , and Aldo Lausarot, Torre Pellice, all of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Jul. 16, 1982, Ser. No. 399,150
Claims priority, application Italy, Jul. 22, 1981, 68016 A/81
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—599 **2 Claims**



1. Apparatus for the controlled mixing of two gasses supplied by two separate sources, comprising:

a plurality of identical capillary tubes;

a distributor device;

two connectors each defining a respective inlet to said distributor device and each connectable to a respective one of said sources; said distributor device being arranged to connect each said inlet to a different group composed of a selected number of said capillary tubes for supplying a respective one of said gasses to each respective group;

a mixing chamber communicating with said capillary tubes for receiving said gasses therefrom and forming a gaseous mixture of said gasses; and

an outlet duct connected to said mixing chamber for receiving said gaseous mixture therefrom and supplying it to an outlet connector defining an outlet from the apparatus, said gaseous mixture containing said two gasses in proprotions which differ according to the number of capillaries in each said group,

said distributor device comprising:

a first intake manifold connected to a first connector of said two connectors;

a first plurality of outlet ducts from said first intake manifold;

a second intake manifold connected to the other connector of said two connectors;

a second plurality of outlet ducts from said second intake manifold;

a plurality of valves each of which is connected to a respective outlet duct of said first plurality of outlet ducts, to a respective outlet duct of said second plurality of outlet ducts, and to a first end of a respective capillary tube, each said valve being operable independently to put the respective capillary tube into communication with a selected one of said outlet ducts,

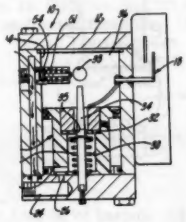
each manifold being connected to a respective one of said connectors through a respective pressure regulator and a respective vent duct having constriction means therein being provided downstream of the pressure regulator for partially venting gas from the respective source from the apparatus.

4,498,497

FLOW METER BYPASS VALVE ASSEMBLY

Lars O. Rosaen, Plymouth, Mich., assignor to Universal Filters, Inc., Hazel Park, Mich.

Filed Jul. 16, 1982, Ser. No. 398,878
Int. Cl.³ F16K *17/04*
U.S. Cl. 137—599.1 **4 Claims**



1. In a fluid flow meter having a housing, a meter inlet, a meter outlet, fluid passage means formed in said housing for fluidly connecting said meter inlet to said meter outlet, and a flow rate responsive member contained in said fluid passage means, the improvement therein comprising,

an elongated valve body having an elongated axial bore,

a fluid passageway formed in said body, said fluid passageway having an inlet end and an outlet end, said axial bore forming a portion of said fluid passageway,

means for detachably threadably securing said body to said housing so that said axial bore in said valve body is axially aligned with said flow meter inlet and so that said fluid passageway inlet end is open to said flow meter inlet and said fluid passageway outlet end is open directly to said meter outlet whereby said fluid passageway bypasses said flow rate responsive member,

a valve member carried within said body and axially movable within said valve body bore between an open position in which said valve member establishes fluid communication between the ends of said fluid passageway and a closed position in which said valve member prevents fluid flow between said ends of said passageway, said valve member including an impingement surface adjacent the inlet end of said fluid passageway when said valve member is in said closed position and said impingement surface facing said meter inlet,

means for moving said valve member to said closed position when fluid flow into said flow meter inlet is less than a predetermined rate;

wherein said fluid passage means comprises an inlet fluid passage formed in said housing and extending substantially perpendicular to said meter inlet,

wherein said impingement surface is disposed closely adjacent said flow meter inlet; and

wherein said impingement surface has a cross-sectional area substantially the same as that of said meter inlet so that influent through said meter inlet directly and perpendicularly impinges upon said impingement surface of said valve member and causes movement of said valve member in response to the rate of said influent flow.

4,498,498

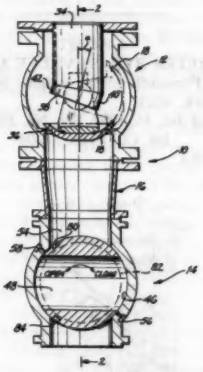
DOUBLE VALVE ASSEMBLY

Enrique Martinez-Vera; Gilberto Guerra-Garcia, both of Monterrey, and Jose L. L. Tovalin, San Nicolas de Los Garza, all of Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Filed Oct. 26, 1981, Ser. No. 315,250

Int. Cl.³ F16K *3/36*

U.S. Cl. 137—613 **6 Claims**



1. A valve assembly adapted to be used in regulating the flow of a particulate material to or from a pressure vessel, said valve assembly comprising a substantially vertically disposed casing, a dish-shaped valve member pivotally mounted in the upper side walls of said casing for swinging movement about a substantially horizontal axis, a feed tube located at the top of said casing for conducting particulate material into said casing above said valve member, said valve member being selectively swingable between a first position in which its upper surface closely confronts the lower end of said feed tube and a second position at one side of said feed tube, and a plug valve including a valve plug and seat substantially horizontally arranged in the lower part of said casing, said plug valve seat having a passage therethrough and said valve plug having a port adapted to register with said passage, said valve plug being selectively rotatable to bring said port into or out of registry with said passage, said lower end of said feed tube including guide means to guide particulate material flowing out said lower end of said feed tube away from said one side thereof to facilitate movement of said dish-shaped valve member from said first position to said second position, said guide means including a member laterally canted in a direction away from said one side of the feed tube.

4,498,499

VALVE FOR GASEOUS AND/OR LIQUID FLOW MEDIA

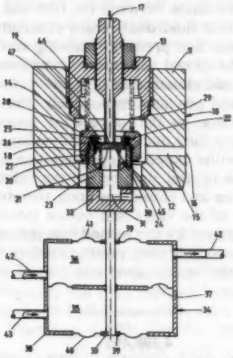
Peter Knorreck, Weissach; Wolfgang Kühne, Stuttgart, and Norbert Müller, Tamm, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 11, 1983, Ser. No. 493,472

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1982, 3226409

Int. Cl.³ F16K *11/16*

U.S. Cl. 137—627.5 **2 Claims**



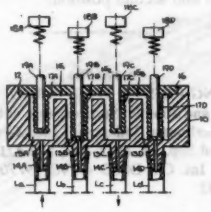
1. A valve for gaseous and/or liquid pressure media, in particular a pressure control valve for producing a control pressure of a pressure-medium-actuated exhaust gas recirculation valve in an internal combustion engine, comprising a valve housing, a valve interior in said housing which is exposed to a control pressure to be imposed, a stationary first valve seat which surrounds a first valve opening between a first pressure source and a valve interior exposed to said control pressure to be imposed, a flat valve closing plate that cooperates with said first valve seat which valve closing plate simultaneously forms a valve closing member for a second valve seat located coaxially with said first valve seat and oriented in the same manner as said first valve seat with respect to said valve closing member, in which said second valve seat surrounds a second valve opening between said valve interior and a second pressure source, a valve spring that urges said valve closing member in a closing direction, and a carrier which receives said second valve seat, said carrier being acted upon on one side by a control force which controls said control pressure and on an opposite side by a restoring spring in combination with said control pressure in said valve interior, said carrier being displaceable by a force resulting therefrom and a throttle opening, which is defined by said valve closing plate and said first valve seat which connects said valve interior continuously with the first pressure source.

4,498,500

MANIFOLD VALVE ASSEMBLY

William Miller, Westport, Conn., assignor to Michael Ebert, Mamaroneck, N.Y.

Continuation-in-part of Ser. No. 2,027, Jan. 9, 1979, Pat. No. 4,241,761. This application Nov. 21, 1980, Ser. No. 209,256
The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.
Int. Cl.³ F16K *11/20*
U.S. Cl. 137—883 5 Claims



1. A manifold valve assembly for selectively interconnecting a group of lines to control the flow of fluid therethrough, said assembly comprising:

A a valve block having a row of cylinders formed therein which communicate at their lower ends with a like row of ports coupled to the respective lines in the group, the upper ends of the cylinders being interconnected whereby fluid admitted into any cylinder in the row thereof flows into the other cylinders;

B a corresponding row of axially-expandable tubular nipples of elastomeric material coaxially supported within the respective cylinders to define fluid chambers therein, the ends of said nipples in their substantially unexpanded state reaching a first point;

C a row of push-buttom actuated rods supported in an actuator block joined to said valve block, said rods projecting into said nipples; the push-buttons associated with the rods being disposed above said actuator block, the push-buttons in the row being axially depressible from a raised position to a depressed position to push in the associated rod, the button position being indicative of the status of the related valve; each rod, when pushed in by its associated button, acting to axially expand the related nipple to cause it to reach a second point; and

D a valve seat in each cylinder cooperating with the end of the nipple therein to cut off fluid flow in the cylinder only when the nipple end reaches one of the points, the flow resuming when the nipple end is shifted to the other point.

4,498,501

MULTIPLE LONGITUDINAL TRAVERSING SHED WEAVING MACHINE CONTAINING A WEAVING ROTOR

Alois Steiner, Rieden, Switzerland, assignor to Sulzer-Rüti Machinery Works Ltd., Rüti, Switzerland

Filed Nov. 28, 1983, Ser. No. 555,622
Claims priority, application Switzerland, Dec. 14, 1982, 7264/82
Int. Cl.³ D03D *41/00*; D03C *13/00*
U.S. Cl. 139—28 12 Claims

1. A multiple longitudinal traversing shed weaving machine comprising:

a weaving rotor rotatable in a predetermined direction of rotation;

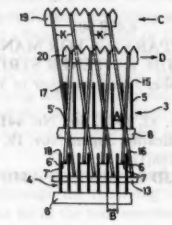
beat-up combs and guide combs arranged at said weaving rotor in alternating fashion in respect of said direction of rotation of said weaving rotor;

each said beat-up comb defining a lamella comb containing in an alternating arrangement first and second lamellae for beating-up weft threads inserted through warp threads;

each said guide comb defining a lamellae comb containing in an alternating arrangement first and second guide lamellae for said warp threads and shed-retaining elements defining an upper shed position of said warp threads;

said second beat-up lamellae and said second guide lamellae, in comparison to said first beat-up lamellae and said first guide lamellae, each being provided with a recess;

said recesses being located at those locations at said lamellae combs which first immerse into said warp threads when



said weaving rotor is rotated in said predetermined direction of rotation;

control means arranged forwardly of said weaving rotor relative to a predetermined direction of travel of said warp threads for laterally deflecting said warp threads and selectively allocating each one of said warp threads to a respective one of said shed-retaining elements; and

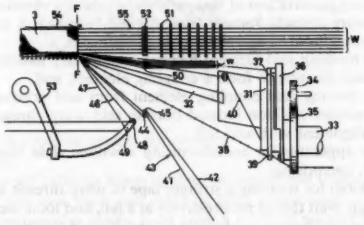
said control means providing maximum lateral deflection of said warp threads after either said first beat-up lamellae or said first guide lamellae have been immersed into said warp threads.

4,498,502

APPARATUS FOR MANUFACTURING A WOVEN SLIDE FASTENER STRINGER

Noritaka Tsubata, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Division of Ser. No. 330,382, Dec. 14, 1981,. This application Nov. 15, 1983, Ser. No. 551,926
Claims priority, application Japan, Dec. 18, 1980, 55-179485
Int. Cl.³ D03D *41/00*
U.S. Cl. 139—35 1 Claim



1. An apparatus for manufacturing a woven slide fastener stringer, comprising:

(a) a loom for weaving a stringer tape of warp threads progressively at a fell;

(b) a support;

(c) a mandrel fixed to said support for being disposed alongside of the warp threads and extending toward the fell;

(d) a rotor rotatably mounted on said support and having a guide hole for passage therethrough of an element-forming filamentary material, said rotor being rotatable for

coiling said element-forming filamentary material in a conical orbital path around said mandrel into a row of coupling elements as they are woven into the stringer tape in synchronization with the weaving of the stringer tape;

(e) a set of heddles disposed outside said conical orbital path in opposite relation to the warp threads across said mandrel for supplying binding warp threads onto the coupling elements to fasten the latter to the stringer tape; and

(f) a pair of filling carriers positioned alongside of said mandrel for introducing a pair of weft threads over and under the coupling elements into interlooped engagement with said binding warp threads.

4,498,503

METHOD AND APPARATUS FOR MANUFACTURING WOVEN SLIDE FASTENER STRINGERS

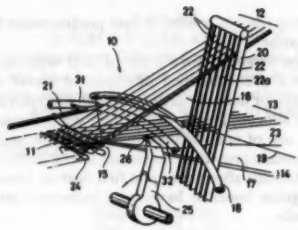
Masaatsu Ofusa, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,397

Claims priority, application Japan, Nov. 19, 1981, 56-185658; Dec. 29, 1981, 56-197188[U]

Int. Cl.³ D03D *49/50, 47/00*; A44B *19/42*

U.S. Cl. 139—116 **8 Claims**



1. A method of manufacturing a woven slide fastener stringer, comprising the steps of:

(a) weaving a stringer tape of warp threads and a single weft thread progressively at a fell; and

(b) coiling an element-forming filamentary material, supplied to said fell longitudinally along a path extending between and substantially parallel to said warp threads, into a row of coupling elements as they are woven into said stringer tape in synchronism with the weaving of said stringer tape, said coiling step including

(1) displacing by pushing said element-forming filamentary material out of said path into a position outside said warp threads, remote from the fell to enable it to become hooked and the pushing terminates,

(2) hooking said element-forming filamentary material at said position to form a coupling element, and

(3) moving said coupling element from said position to another position located outside said warp threads in alignment with said fell.

2. An apparatus for manufacturing a woven slide fastener stringer, comprising:

(a) a loom for weaving a stringer tape of warp threads and a single weft thread progressively at a fell, said loom including a reed having guide slots for the passage therethrough (1) of the warp threads and (2) of an element-forming filamentary material along a path extending between and substantially parallel to the warp threads, and a filling carrier disposed at one edge of the warp threads and reciprocable for introducing the weft thread into interlaced engagement with the warp threads; and

(b) means operable in synchronism with said loom for coiling the element-forming filamentary material into a row of coupling elements, whereby the row of coupling elements are woven into the stringer tape as the latter is woven, said coupling means including

(1) a hook disposed at said one edge of the warp threads and angularly movable, about an axis parallel to the general plane of the stringer tape, and in a plane perpendicular to the general plane of the stringer tape being woven, between a first position located in alignment with the fell and a second position remote from the fell, and

(2) means disposed at the opposite edge of the warp threads for displacing the element-forming filamentary material out of said path beyond the warp threads beyond the plane of movement of said hook while said hook is at said second position.

4,498,504

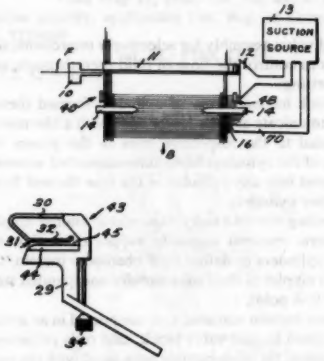
FILLING FRINGE WASTE REDUCTION

Danny H. Allen, and John H. Sumner, both of Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Sep. 23, 1982, Ser. No. 421,730

Int. Cl.³ D03D *47/40, 49/70*

U.S. Cl. 139—302 **17 Claims**



1. In an air jet loom for weaving fabric, including a main jet, a reed, a suction source mounted on the opposite side of the reed from the main jet, temples, a fringe cutter mounted on the same side of the fabric being woven as the suction source, and downstream of the temples in the directin of woven fabric movement, and a filling detector between the reed and suction source: a filling fringe waste reduction means for eliminating outer or auxiliary leno selvage waste from both sides of favric being woven and avoiding the utilization of outer leno yarns, said waste reduction means including:

a filling yarn mechanical clamping means operatively disposed between said filling detector and said suction source for holding filling yarns from said main jet; and

a second suction source mounted adjacent and exterior of said fringe cutter for removing fabric ends cut by said fringe cutter.

14. A method of minimizing outer or auxiliary leno selvage from both sides of fabric being woven on an air jet loom without utilizing outer leno yarns, comprising the steps of: effecting combined mechanical clamping and cutting of the filling yarn at the loom left hand side immediately adjacent the left hand edge of the fabric being woven so that acceptable fringe length, without subsequent trimming, is provided on the left hand edge of the fabric being woven; and

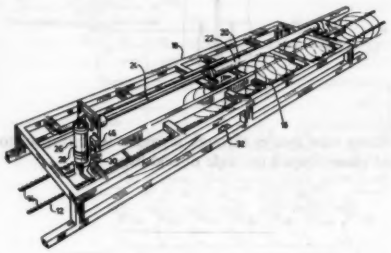
mechanically clamping the filling yarn ends at the right hand side of the loom to provide adequate yarn tension on each filling yarn over a period of time, beginning slightly before beatup and continuing until several picks later, so that the fabric edge is woven tightly without looseness or kinks.

4,498,505

APPARATUS FOR SEPARATING A COIL FROM FOLLOWING COILS OF COILED WIRE ROD

Jan H. Kamping, 1804-2160 Lakeshore Rd., and Elmer R. Bridge, both of Burlington, Canada

Filed Jun. 21, 1983, Ser. No. 506,556
Int. Cl.³ B26D 7/14
U.S. Cl. 140—2 **6 Claims**



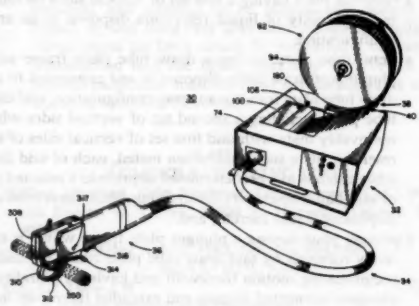
1. Apparatus for separating coils of coiled wire rod from following coils travelling along a moving conveyor comprising a coil engaging device mounted above the conveyor, means for advancing the coil engaging device in the same direction as the conveyor from a first position to a second position at a speed greater than that of the conveyor and for returning the coil engaging device to the first position and means for moving the coil engaging device downwardly to engage a selected coil at the first position to cause the selected coil to be moved ahead relative to following coils by said advancing movement of the coil engaging device and for moving the coil engaging device upwardly to disengage from the coil at the second position.

4,498,506

TOOL FOR THE AUTOMATIC INSTALLATION OF DISCRETE CABLE TIES PROVIDED ON A CONTINUOUS RIBBON OF CABLE TIES

Roy A. Moody, Flossmoor; John J. Bulanda, New Lenox; Robert F. Levin, Bollingbrook; Steven S. Timian, Lockport, and Stephen A. Waltasti, Bollingbrook, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Nov. 24, 1982, Ser. No. 444,495
Int. Cl.³ B21F 9/02
U.S. Cl. 140—93.2 **20 Claims**



1. An automatic cable tie installation tool for fastening a discrete cable tie around a bundle of wires or the like, comprising:

dispenser means for accepting a ribbon of cable ties having a laterally disposed strip portion of sufficient rigidity to define a substantially planar ribbon, wherein said cable ties extend from said strip portion and are connected to said strip portion by connecting means, said dispenser means including separating means for removing individual cable ties from said ribbon whereby said dispenser means provides discrete cable ties from said ribbon;

tool means for positioning, tensioning and severing the tail of the discrete cable tie provided by said dispenser means around the bundle of wire or the like, said dispenser means being spaced from said tool means and not being supported by said tool means; and

tubular conveyance means for delivering the discrete cable tie provided by said dispenser means to said tool means.

16. An improvement in a cable tie installation tool having a tool member for positioning, tensioning and severing the tail of a cable tie around a bundle of wires or the like, the tool member having a cable tie receiving tube for orienting and positioning the cable tie in the tool member, the cable tie being provided to the receiving tube by a propulsion means at a velocity sufficient to propel the cable tie through the receiving tube and into position in the tool member, said improvement comprising:

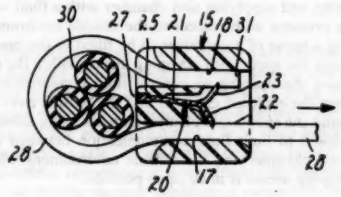
means for decelerating, stopping and gripping the cable tie as it passes through the receiving tube to correctly position the cable tie in the tool member and to minimize the likelihood of impact damage to the cable tie due to abrupt deceleration; said means having opposing pads, each of said pads having an inwardly directed ramp and an inwardly directed gripping tab, said ramps of said opposing pads effecting deceleration of the cable tie and said tabs of said opposing pads stopping the forward motion of the cable tie and gripping the cable tie; and each of said pads being resiliently mounted in a manner to project said ramps and said gripping tabs into the receiving tube and to resiliently bias said pads inwardly.

4,498,507

CABLE TIE

Craig D. Thompson, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 28, 1983, Ser. No. 508,812
Int. Cl.³ B21F 9/02; B65D 63/14
U.S. Cl. 140—93.2 **12 Claims**



1. A cable tie system comprising:

a tool,

a series of cable tie heads retained in aligned end to end relation in said tool, each said cable tie head comprising:

a rectangular plastic head having a pair of parallel cable tie strap passages therethrough, and

a metal pawl in said plastic head, said pawl having a planar body extending generally parallel to and lying between said strap passages and at least two teeth at one end of said body, said pawl teeth being bent out of the plane of said body to provide pawl teeth that can simultaneously project one into each of said passages at an angle to the length thereof to engage a cable tie strap at two spaced locations, each of said teeth being bent out of the plane of said body through an angle less than 90°, said pawl body being retained in said plastic head by its end opposite the end having said teeth such that said pawl body is cantilev-

ered and normally positioned with no pawl tooth extending into a first of said cable tie passages, and

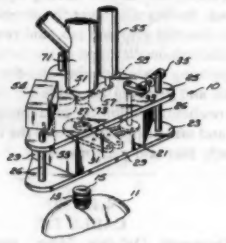
a spool of cable tie strap material formed and supported on said tool to permit the free end thereof to be slid through said first strap passage in at least one of said cable tie heads from the end thereof adjacent the toothed end of said pawl, looped around a bundle of wires and then threaded back into the second of said passages in said one cable tie head from the end of said body in which said pawl body is retained by said plastic head and past the pawl tooth projecting into said second passage to deflect said pawl and engage the pawl teeth with the strap in both strap passages to prevent backward movement of the strap in said second strap passage and any further forward movement of said strap in said first strap passage.

4,498,508

CONTAINER FILLER

William R. Scholle, Corona Del Mar, and William Lloyd-Davies, South Laguna, both of Calif., assignors to Scholle Corporation, Irvine, Calif.

Filed Feb. 4, 1983, Ser. No. 464,112
Int. Cl.³ B65B *31/02*
U.S. Cl. 141—5 **11 Claims**



11. A method of aseptically filling a container with a product using filling apparatus in a sterile chamber, comprising the steps of:

providing an enclosed sterile chamber having a wall opening therein and supplying said chamber with a fluid at a positive pressure with respect to the outside environment;

placing a spout of a container to be filled in the opening;

clamping the spout with clamping means within the opening to seal the opening to control fluid communication between the enclosed chamber and the outside environment around the spout, said clamping means being substantially enclosed to limit fluid communication between said enclosed chamber and the outside environment when said clamping means is in an open position.

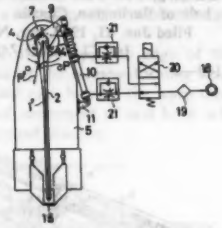
4,498,509

FILLING METHOD OF PARTICULATE MATERIAL INTO VALVED PACKING BAG AND APPARATUS EMPLOYED THEREFOR

Katsuhiko Kojima, Shiga; Toyomi Tanaka, Miyakoshi, and Shigeo Nakajima, Mukoh, all of Japan, assignors to Nakajima Seisakusho Co., Ltd., Japan

Filed Feb. 7, 1983, Ser. No. 464,464
Claims priority, application Japan, Feb. 16, 1982, 57-23799
Int. Cl.³ B65B *1/04, 1/10*
U.S. Cl. 141—10 **2 Claims**

1. A method of filling a particulate material into a valved packaging bag having a central plane, which comprises the steps of inserting a filling tube in a direction parallel to the central plane of the bag into a valve hole of a side valve type valved packaging bag having a filling opening side face thereof, supplying particulate material into said bag through said filling tube, and rotating the filling tube about its axis during filling of the bag so that the direction in which the particulate material is introduced into the bag from the end of



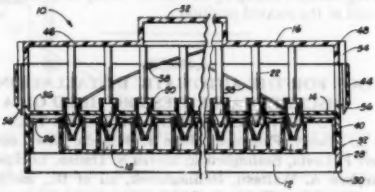
said filling tube moves through an angle with respect to the central plane toward one side of said bag.

4,498,510

DEVICE FOR DRAWING, HOLDING AND DISPENSING LIQUID

Edward C. Minshew, Jr., 3271 F Matthews, Fort Worth, Tex. 76118, and Ray F. Chesley, 2903 Meadow Ave., Norman, Okla. 73069

Filed Aug. 20, 1982, Ser. No. 409,824
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—27 **16 Claims**



1. A device for drawing, holding and dispensing a plurality of distinct liquid masses comprising:

a reservoir plate having a first set of vertical sides surrounding a plurality of liquid reservoirs disposed in an array configuration;

a draw tube plate having a draw tube plate frame and a plurality of draw tubes disposed in and connected to said draw tube plate frame in an array configuration, said draw tube plate including a second set of vertical sides which removably mate with said first set of vertical sides of said reservoir plate such that, when mated, each of said draw tubes extends to a predetermined depth into a selected one of said liquid reservoirs for drawing liquid therefrom and dispensing liquid thereto; and

a plunger plate having a plunger plate frame which is captively received by said draw tube plate frame for sliding reciprocating motion therewith and having a plurality of plungers connected thereto and extended therefrom in an array configuration such that each of said plungers sealingly extends into a selected one of said draw tubes and such that application of an external hand pressure on an upper exterior portion of said plunger plate causes a corresponding axial stroke of said plungers, said stroke having a selectable axial length which results in the drawing and dispensing of a predetermined liquid volume.

4,498,511

APPARATUS FOR FILLING A VALVE BAG

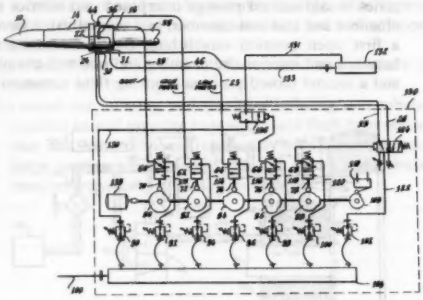
J. George Lepisto, Middletown, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 28, 1982, Ser. No. 424,893

The portion of the term of this patent subsequent to Sep. 18, 2084, has been disclaimed.

Int. Cl.³ B65B 1/18

U.S. Cl. 141—85 **6 Claims**



1. A system for controlling the filling of a valve bag with particulate material, said bag including a generally tubular filling valve, said system being used with a source of pressurized air and a filling nozzle dimensioned to fit in the filling valve, said system comprising:

first, second and third cams;

means for driving said cams;

a supply air manifold;

means for coupling said supply air manifold to the source of pressurized air;

a first cam actuated valve means coupled to said supply air manifold and adapted to be sequentially opened and closed by said first cam for providing a high pressure blast of air into the filling nozzle after a valve bag has been filled to clear remaining particulate material from said nozzle;

a second cam actuated valve means coupled to said supply air manifold and adapted to be sequentially opened and closed by said second cam after said first cam actuated valve means has been closed for providing a low pressure blast of air into the filling valve externally of the filling nozzle, to suspend particulate material accumulated in the filling valve; and

a third cam actuated valve means coupled to said supply air manifold and adapted to be sequentially opened and closed by said third cam after said second cam actuated valve means has been closed for providing a vacuum for introduction into the filling nozzle to remove the suspended particulate material from said filling valve as the nozzle is removed therefrom.

4,498,512

LUMBER SAW-SIZING TOOL

Wilfred Hiestand, 8806 Birchleaf Ave., Downey, Calif. 90240, and Everett O. Oliver, 15504 E. Hornell, Whittier, Calif. 90604

Filed Aug. 2, 1982, Ser. No. 404,446

Int. Cl.³ B27C 9/00

U.S. Cl. 144—2 R **6 Claims**

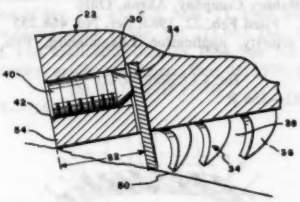
1. A lumber dressing tool comprising,

(a) a rigid circular disc;

(b) a hub dependent from one side of said disc;

(c) drive attachment means carried on said center hub permitting the removable attachment of said disc to a rotary drive unit;

(d) a single peripheral circular groove spaced from 0.1 to 0.5 inch inward of the periphery of said disc, and on the side of said disc opposite said hub, and having a sufficient depth to receive a length of a band saw blade and band saw blade lock means removably received in said disc to removably secure said blade; and



(e) blade depth limiting stop means in said groove permitting a maximum exposure of said saw blade from 0.1 to 0.3 inch.

4,498,513

PLANE

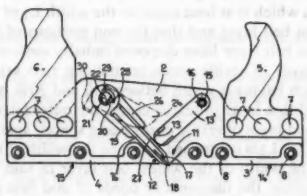
Charles Derivaz, La Tour-de-Peilz, Switzerland, assignor to Samvaz S.A., Fenil-sur-Vevey, Switzerland

Filed Dec. 27, 1983, Ser. No. 565,885

Claims priority, application Switzerland, Jan. 24, 1983, 378/83

Int. Cl.³ B27G 17/02

U.S. Cl. 145—11 **4 Claims**



1. Plane comprising a body having two parallel side walls (1,2) disposed on either side of a front sole (3) and a back sole (4), the lower faces of said soles (14,15) being located in a common plane and said soles defining between them an opening having the general shape of a V, a blade-holder pivotally mounted on an axle (20) journalled between the side walls, said blade-holder comprising a lower blade (16) having a forward free end having thereon positioning means (17) for a cutting blade (18); a removable cutting blade (18) having locating means cooperating with said positioning means (17); said blade-holder also comprising a counter-blade (27) angularly displaceable relative to said lower blade (16); said axle (20) of the blade-holder (21) having trunnions pivoted in said side walls (1,2), said axle (20) comprising a central part which is eccentric to said trunnions (21); a working lever (24) angularly fast with said axle (20) to control the rotation of said axle (20) and thereby the displacement of the blade-holder perpendicularly to said axle (20), an arresting device (13) articulated on the side walls (1,2) and pinching strongly the cutting-blade (18) between the lower blade (16) and the counter-blade (27) and maintaining, in service position, the blade-holder against a bearing face (12) of the back sole (4); said counter-blade (27) being displaceable linearly with respect to said lower blade (16) to modify the free width of the cutting edge of the cutting blade (18), and control means controlling said linear displacement of said counter-blade (27).

4,498,514

REINFORCING BELT FOR TIRES WITH RADIAL CASING

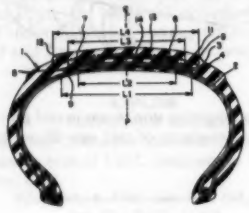
Antonnis G. Maathuis, Foulhren, and Anthony W. Parsons, Schieren, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 22, 1983, Ser. No. 468,255

Claims priority, application Luxembourg, Feb. 26, 1982, 83980

Int. Cl.³ B60C 9/20, 9/08

U.S. Cl. 152—356 R **4 Claims**



1. A tire with radial carcass, a ground engaging tread, a reinforcing belt structure disposed between the carcass and said tread, said reinforcing belt structure comprising a radially outwardly disposed belt layer and a radially innermost belt layer of filaments or cords having a width L_2 and a width L_1 respectively, the filaments or cords of each of said belt layers forming an angle of 15°-35° with respect to the circumferential direction of the tire, characterized in that the reinforcing belt structure is covered by a first layer of textile cords of axial width L_4 which is at least equal to the width L_2 of the radially outermost belt layer and that the end portions of the radially innermost belt layer have disposed radially outward thereof a second layer of textile cords comprising two axially spaced bands each having a width between 10 and 30% of the width L_4 of said first layer of textile cords, the outer lateral edges of said second layer of textile cords being spaced apart a distance L_3 such that L_3 is comprised between the width of the narrowest and the width of the widest belt layer of said reinforcing belt structure, the filaments or cords of said first and second layers of textile cords being disposed such that they form an angle of between 0° and 10° with respect to the circumferential direction of the tire.

4,498,515

ONBOARD TIRE INFLATION SYSTEM

Joseph C. Holtzhauser, Kalamazoo, and Dale L. Kwasniewski, Battle Creek, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 3, 1983, Ser. No. 538,295

Int. Cl.³ B60C 29/00, 23/16

U.S. Cl. 152—417 **26 Claims**

1. An onboard tire inflation system for remotely controlling the inflation pressure of at least one inflatable tire, said system comprising:

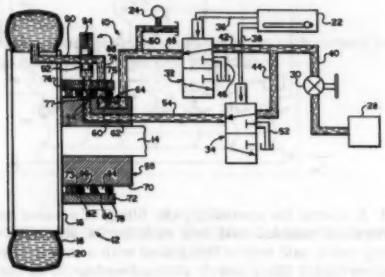
an axle wheel end assembly comprising an axle housing spindle end having a first fluid passage therein opening to an exterior surface thereof, a wheel hub and rim assembly rotatably supported on said axle housing spindle end, said tire sealingly mounted on said wheel hub and rim assembly to define a selectively pressurized interior tire chamber, a second fluid passage in said wheel hub and rim assembly leading from said interior tire chamber to an exterior surface of the hub and rotary seal means associated with said axle housing spindle end and said hub defining a seal chamber establishing constant fluid communication between said first and second fluid passages;

an onboard source of pressurized fluid;

a third fluid passage fluidly connecting said source and said first fluid passage;

first valve means connected in series in said third fluid passage interposed said source and said first fluid passage, said first valve means having a first position for fluidly connecting said first passage and said source and a second position for sealing said source from said first passage and connecting said first passage to an exhaust;

second valve means mounted on said hub and connected in series in said second passage interposed said interior tire chamber and said seal chamber, said second valve having a first open position establishing fluid communication between said interior tire chamber and said seal chamber and a second closed position blocking fluid communication between said interior tire chamber and said seal chamber; and



a control member remote from said wheel end assembly having a selectable first setting for increasing the inflation pressure of said tire, a selectable second setting for decreasing the inflation pressure of said tire and a selectable third setting for maintaining the existing inflation pressure of said tire, said control member operating said first and second valves whereby in said first setting said first and second valves are in said first positions thereof, in said second setting said first valve is in said second position thereof and said second valve is in said first position thereof and in said third setting said first and second valves are in said second positions thereof.

4,498,516

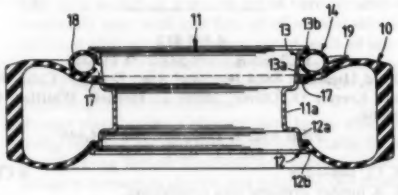
TUBELESS TIRE BEAD SEATER AND METHOD OF EMPLOYING THE SAME

Hugh M. Parker, 718 Cherokee St., Talladega, Ala. 35160

Continuation of Ser. No. 346,849, Feb. 8, 1982, abandoned. This application Feb. 14, 1984, Ser. No. 580,104

Int. Cl.³ B60C 25/00

U.S. Cl. 157—1.1 **4 Claims**



1. A device for seating a tubeless, pneumatic tire on a wheel rim having outwardly extending inclined ledge portions terminating in annular outturned lips comprising:

(a) a resilient, inflatable, firm, reinforced endless tubular member having a poisson's ratio above 0.55 and adapted

to be placed within an annular gap between a bead of a tire and an adjacent inclined ledge portion of said wheel rim and constructed and arranged so that upon inflation there is constrictive movement of said tubular member as it moves radially and inwardly relative to said adjacent inclined ledge portion and exerts a force radially and inwardly thereon as said tubular member moves into sealing engagement with said adjacent inclined ledge portion and said bead and fills said annular gap in response to inflation of said tubular member to a pressure to provide a fluid-tight seal between said bead and said adjacent inclined ledge portion,

(b) means for inflating said tubular member to a pressure to provide said fluid-tight seal, and

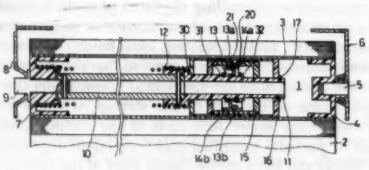
(c) means for inflating said tire after inflating said tubular member to said pressure to provide said fluid-tight seal so that said bead is moved outwardly along said adjacent ledge portion of said wheel rim and forces said tubular member outwardly of said annular gap.

4,498,517

BRAKING DEVICE FOR USE IN A ROLLER BLIND

Ryoichi Mase, Tokyo, Japan, assignor to Toso Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1983, Ser. No. 466,499
Claims priority, application Japan, Feb. 19, 1982, 57-024514
Int. Cl.³ E06B *9/208*
U.S. Cl. 160—294 **7 Claims**



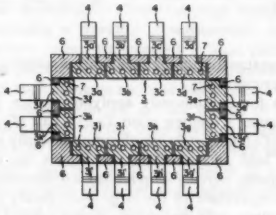
1. A braking device for use in a roller blind of the type having two backets, a fixed shaft non-rotatably supported by one of the two brackets, a tube having an end thereof fitted on the fixed shaft and the other end rotatably supported by the other bracket, a screen wound on the tube, and a spring-motor interposed between the fixed shaft and the tube, said braking device comprising a brake drum non-rotatably supported by the fixed shaft, a coil spring brake mounted on said brake drum, a cam casing integrally fitted in the tube, a cam sleeve mounted on said coil spring brake formed with a cam groove, said coil spring brake having one end thereof connected to said cam sleeve and the other end disposed along said cam groove, said cam groove being Y-shaped and centrally formed with a V-shaped land to form twin top inlets, a central inlet and a bottom inlet, whereby said cam pin moves from said bottom inlet to one of said twin top inlets to loosen said coil spring brake when the screen is pulled down to a first position from the uppermost position, removes from said top inlet to said central inlet to fasten said coil spring brake on said brake drum when the screen is released at said first position, and returns from said central inlet through said other top inlet to said bottom inlet to loosen said coil spring brake when the screen is released after pulled down from said first position.

4,498,518

CONTINUOUS CASTING MOLD PROVIDED WITH ULTRASONIC VIBRATORS

Nobuhisa Hasebe; Hiroshi Kawada, both of Yokohama, and Isamu Komine, Yokosuka, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 473,978, Mar. 11, 1983, abandoned, which is a continuation of Ser. No. 213,043, Dec. 4, 1980, abandoned. This application Jan. 23, 1984, Ser. No. 572,962
Claims priority, application Japan, Dec. 21, 1979, 166365/79
Int. Cl.³ B22D *11/04*
U.S. Cl. 164—416 **4 Claims**



1. In a continuous casting mold having side walls, and which comprises:

a plurality of ultrasonic vibrators, fitted to the outer surface of each of said side walls of said mold, along each of a plurality of spaced apart straight lines which extend in the axial direction of said mold, said plurality of ultrasonic vibrators fitted along a respective one of said plurality of straight lines being spaced apart from each other at prescribed intervals in said axial direction, said plurality of axially directed straight lines being arranged spaced apart from each other at prescribed intervals in the width direction of said mold, and said side walls of said mold being mutually independent of each other with respect to vibration waves applied by said plurality of ultrasonic vibrators to said side walls;

the improvement wherein:

each of said side walls of said mold comprises a plurality of side wall sections (*3a, 3b,* 3c, etc.) which are spaced apart from each other in the width direction of said mold, each of said plurality of side wall sections corresponding to a respective one of said plurality of straight lines of said plurality of ultrasonic vibrators fitted to the outer surface of each of said side walls, and each of said plurality of side wall sections having, along said respective one of said plurality of straight lines, said plurality of ultrasonic vibrators coupled to the outer surface thereof to apply vibrations to same;

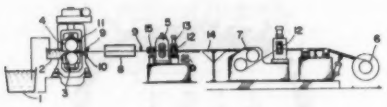
whereby said plurality of side wall sections of each of said side walls of said mold are mutually independent of each other in the width direction of said mold with respect to vibration waves applied by said plurality of ultrasonic vibrators to said plurality of side wall sections, and said vibration waves caused in said plurality of side wall sections of each of said side walls of said mold by said plurality of ultrasonic vibrators substantially do not interfere with each other in the width direction of said mold.

4,498,519

APPARATUS FOR CONTINUOUS MANUFACTURING LEAD OR LEAD ALLOY STRIP

Yasushi Watanabe, Nikko; Yuichi Suzuki; Yukihiro Nagata, both of Yokohama, and Kiyotaka Hoshino, Nikko, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and The Furukawa Battery Co., Ltd., Yokohama, both of, Japan

Filed May 4, 1983, Ser. No. 491,381
Claims priority, application Japan, May 11, 1982, 57-78588
Int. Cl.³ B21B *13/22*
U.S. Cl. 164—417 **7 Claims**



1. An apparatus for continuously manufacturing lead or lead alloy strip, comprising:

(a) means for continuously applying molten lead or lead alloy having a melting point T_0 to a pair of cooling rolls;

(b) a pair of cooling rolls which simultaneously solidifies said molten lead or lead alloy and shapes the metal into a continuously moving strip having a temperature T_1 which is the temperature of the strip immediately after rolling, said cooling rolls necessarily being cooled in order to continuously cool the molten metal applied to the surface of the pair of rolls;

(c) means for applying forward tension to said continuously moving strip such that said strip has a forward slip ratio δ, the forward tension being such that the following relationship is maintained:

$$K=\sqrt{\delta}\times T_1/T_0$$

wherein $0.45 \geqq K \geqq 0.17$

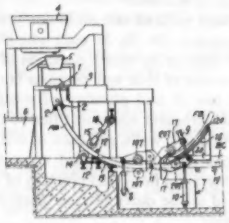
(d) take-up means for coiling said continuously moving strip.

4,498,520

APPARATUS FOR THE CONTINUOUS CASTING OF METALS

Piero Colombo, Udine, Italy, assignor to Continua International Continuous Casting S.p.A, Ferrara, Italy

Filed Jan. 29, 1982, Ser. No. 343,817
Claims priority, application Italy, Jan. 30, 1981, 12426 A/81
Int. Cl.³ B22D *11/128*
U.S. Cl. 164—426 **7 Claims**



1. An apparatus for the continuous casting of metals in a curved path, comprising:

a mold for producing a casting bar;

a rigid curved starter bar for initiating the casting process;

a reversible withdrawing and straightening mechanism including an inlet end and an outlet end, said withdrawing and straightening mechanism including a pair of powered extractor rollers at said outlet end;

means for supporting said powered extractor rollers in a relatively movable fashion;

means for selectively displacing said powered extractor rollers between an opened and closed position;

means for storing said starter bar laterally adjacent said withdrawing and straightening mechanism after said starter bar has initiated the casting process; and

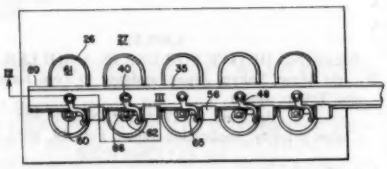
means for transversely shifting said starter bar between a first and second position when said powered extractor rollers are in the opened position, in said first position said starter bar is located out of the casting path supported by said storing means and in said second position said starter bar is located in the casting path for engagement by said powered extractor rollers when in the closed position.

4,498,521

MOLTEN METAL LEVEL CONTROL IN CONTINUOUS CASTING

Susumu Takeda, Danville, Calif.; Allen W. Mann, Spokane, Wash.; David G. Goodrich, Danville, and Theodore C. Ziniger, Livermore, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed May 26, 1981, Ser. No. 266,788
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—453 **11 Claims**



1. A method for controlling the level of molten metal in a plurality of vertically disposed continuous or semicontinuous conventional D.C. or E.M. casting units having feed and discharge ends during the startup thereof so that the molten metal levels in the casting units are maintained in essentially the same horizontal plane at the end of the startup, wherein molten metal flows to the upper feed ends of the casting units and solidified or partially solidified ingots or billets supported by bottom blocks exit from the discharge ends of the casting units at the same rate comprising:

A. simultaneously and precisely sensing the level of molten metal in each of said casting units;

B. generating signals representing the molten metal level sensed in each of said casting units;

C. when the molten metal in any of the casting units reaches a predetermined level, generating a set point signal which increases in magnitude with respect to time and which represents a desired molten metal level which rises to a final level over a period of time;

D. comparing each of the signals representing the molten metal level sensed in each of the casting units with the increasing set point signal representing the rising molten metal level desired;

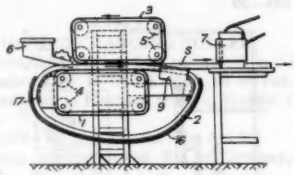
E. regulating the flow of molten metal to the individual casting units in response to differences between the signals compared to control the molten metal level in each of the casing units to essentially the same desired rising level; and

F. when the molten metal levels in all of the casting units are in essentially the same horizontal plane, dropping the bottom blocks so the solidified or partially solidified ingot or billets exit from the discharge ends of the casting units at the same rate.

4,498,522
ELECTROLYTIC REFINING OF METAL

William Nelson, Birkenhead, and John P. Bearpark, Lymm, both of England, assignors to BICC Public Limited Company, London, England

Continuation of Ser. No. 180,000, Aug. 21, 1980, abandoned, which is a continuation of Ser. No. 897,355, Apr. 18, 1978, abandoned. This application Jun. 28, 1982, Ser. No. 392,762
Claims priority, application United Kingdom, Apr. 20, 1977, 16499/77; May 20, 1977, 21387/77
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—460 3 Claims



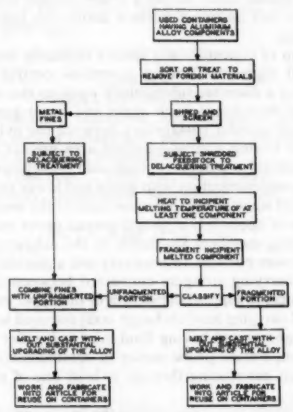
1. A method of forming unrefined electrodes in quantity for use in the electrolytic refining of metal, which method comprises continuously casting molten metal into a mould formed at least in part by a moving endless belt which provides a supporting surface for molten metal and two laterally spaced moving edge dams, which are positioned immediately above the belt, to form a cast strip which, in each of a plurality of longitudinally spaced minor portions of its length separating longitudinally spaced major portions of the length of strip, has at least one area which constitutes a major portion of said minor portion and in which the amount of metal is substantially less than that of a similar area of the major portion of the length of the strip; and cutting the strip so cast at positions spaced along its length and so related to said at least one area of each minor portion of the length of the strip as to form a plurality of unrefined electrodes, each of which electrodes has, in that portion of the electrode that will protrude above the level of the electrolyte solution when the electrode is supported in an electrolytic cell, at least one area which constitutes a major portion of said protruding portion of the electrode and in which the amount of metal is substantially less than that in a similar area of the main body of the electrode wherein said area or at least one of said areas in each of said longitudinally spaced minor portions of the length of the strip is a hole formed by one of a plurality of substantially rigid elongate members which extend transversely at least partly across the belts and are carried by the laterally spaced moving edge dams at spaced positions along their lengths, wherein said area or at least one of said areas in each of said longitudinally spaced minor portions of the length of the strip is a region of substantially reduced thickness as compared with that of the major portion of the length of the strip, which region is formed by one of a plurality of substantially rigid elongate members which extend transversely at least partly across the belts and are carried by the laterally spaced moving edge dams at spaced positions along their lengths and wherein each elongate member is of such a form that at least a part of one of its surfaces is spaced from the surface of one of the belts and extends lengthwise of the belt from one side edge of the elongate member to the other and molten metal flows over or under said part to form a region of the cast strip of substantially reduced thickness as compared with that of the major portion of the length of the strip.

2. Apparatus for forming unrefined electrodes in quantity for use in the electrolytic refining of metal, which apparatus comprises a strip-casting mould formed at least in part by a moving endless belt which provides a supporting surface for molten metal and two laterally spaced moving edge dams which are positioned immediately above the belt; shaping means carried by at least one of the edge dams and the belt at spaced positions along its length and protruding into the mould, which shaping means will form in each of a plurality of longitudinally spaced minor portions of the length of a strip separating major portions of the length of a strip as it is being cast in the mould, at least one area which constitutes a major proportion of said minor portion and in which the amount of metal is substantially less than that in a similar area of the major portion of the length of the strip; and means for cutting the case strip at portions spaced along its length and so related to the said at least one area of each minor portion of the length of the strip as to form a plurality of unrefined electrodes, each of which electrodes will have in that portion of the electrode that will protrude above the level of the electrolyte solution when the electrode is supported in an electrolytic cell, at least one area which constitutes a major proportion of said protruding portion of the electrode and in which the amount of metal is substantially less than that in a similar area of the main body of the electrode, said mold being closed by a second moving endless belt which is positioned immediately above the edge dams, the shaping means comprising a plurality of substantially rigid elongate members which extend transversely at least partly across the belts and are carried by the laterally spaced moving edge dams and wherein each elongate member has at least a part of one of its surfaces spaced from the surface of one of the belts and extending lengthwise of the belts from one side edge of the elongate member to the other such that molten metal will flow over or under said part to form a region of a cast strip of substantially reduced thickness as compared with that of the major portion of the length of the strip.

4,498,523
CONTINUOUS METHOD FOR RECLAIMING, MELTING AND CASTING ALUMINUM SCRAP

Kenneth A. Bowman, Allegheny Township, Allegheny County, and Marvin E. Gantz, Jr., Ligonier, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 12, 1983, Ser. No. 494,071
Int. Cl.³ B22D *11/10*
U.S. Cl. 164—477 24 Claims


USED CONTAINERS HAVING ALUMINUM ALLOY COMPONENTS
SORT OR TREAT TO REMOVE FOREIGN MATERIALS
METAL FINES
SHRED AND SCREEN
SUBJECT TO DELACQUERING TREATMENT
SUBJECT SHREDDED FEEDSTOCK TO DELACQUERING TREATMENT
HEAT TO INCIPIENT MELTING TEMPERATURE OF AT LEAST ONE COMPONENT
FRAGMENT INCIPIENT MELTED COMPONENT
COMBINE FINES WITH UNFRAGMENTED PORTION
UNFRAGMENTED PORTION
CLASSIFY
FRAGMENTED PORTION
MELT AND CAST WITHOUT SUBSTANTIAL UPGRADING OF THE ALLOY
MELT AND CAST WITHOUT SUBSTANTIAL UPGRADING OF THE ALLOY
WORK AND FABRICATE INTO ARTICLES FOR REUSE ON CONTAINERS
WORK AND FABRICATE INTO ARTICLES FOR REUSE ON CONTAINERS

1. A continuous process for the recovery of an aluminum alloy from aluminum scrap containing more than one alloy, the recovery made in a manner which will conserve energy, the process which comprises:

(a) providing a feedstock containing at least two components therein comprised of different aluminum alloys having different incipient melting temperatures, the components having at least parts thereof joined to each other;

(b) heating and agitating the feedstock sufficiently to cause said joined components to become detached from one

another by fragmentation of the component having the lower incipient melting temperature;

(c) separating one of the detached components from the remainder of the feedstock;

(d) melting at least one of the separated components; and

(e) thereafter continuously casting an aluminum alloy from said melted component without substantially upgrading the composition thereof to provide a cast alloy having a composition substantially the same as that from which said separated component was fabricated.

4,498,524

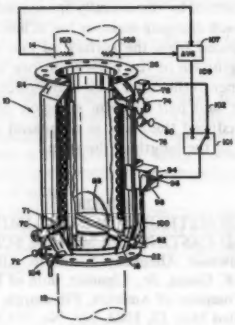
HEAT EXCHANGER WITH BY-PASS

Orval E. Jacobsen, Box 3429, #2 Caravaca La., Hot Springs Village, Ark. 71909

Division of Ser. No. 822,712, Aug. 8, 1977, Pat. No. 4,371,027, which is a continuation-in-part of Ser. No. 612,043, Sep. 10, 1975,. This application Sep. 30, 1982, Ser. No. 429,038

Int. Cl.³ G05D *23/00;* **B60H** *1/00;* **F28F** *27/02*

U.S. Cl. 165—36 **7 Claims**



1. An in-line exhaust gas heat exchanger for use with a vertical exhaust stack having a lower portion below the heat exchanger and an upper portion above the heat exchanger, comprising:

(a) a pair of concentrically spaced vertically disposed cylindrical segments forming a vertical central passageway having a diameter substantially equal to the inside diameter of the exhaust stack upper and lower portions, and a vertical annular passageway between the cylindrical segments having a cross-sectional area greater than that of the central passageway, both said passageways being in open communication with upper and lower portions of the exhaust stack at the respective ends of the heat exchanger, a pair of oppositely disposed coaxial upper and lower end coupling members attachable to the exhaust stack upper and lower portions respectively and a plurality of vertical load carrying stringers connected between the coupling members to support the weight of the upper exhaust stack;

(b) fluid carrying heat exchange coils disposed in the annular passageway and having fluid inlet and outlet ports;

(c) a temperature probe means in communication with the exhaust gas passing through at least one of said passageways;

(d) a butterfly valve disposed in the lower end of the central passageway;

(e) means operably connected to the butterfly valve and responsive to the output of the temperature probe means for controlling the position of the butterfly valve within preselected limits; and

(f) said lower end coupling member being provided with a trough in communication with the annular passageway for trapping condensation moisture, and a drain attached to the lower portion of said trough and in communication with said trough for draining same; wherein the position of the butterfly valve may be controlled by preselected temperature limits detected by the temperature probe means.

4,498,525

FUEL/OIL HEAT EXCHANGE SYSTEM FOR AN ENGINE

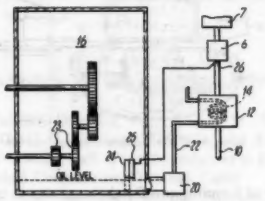
Stanley Smith, Gloucestershire, England, assignor to Rolls-Royce Limited, London, England

Filed Nov. 30, 1982, Ser. No. 445,567

Claims priority, application United Kingdom, Dec. 10, 1981, 8137324

Int. Cl.³ F02M *31/00*

U.S. Cl. 165—39 **4 Claims**



1. A fuel/oil heat exchange system for an engine having a fuel system, an oil system and a gearbox, the heat exchange system comprising:

a heat exchanger located to receive fuel flowing through the engine fuel system,

a scavenge system for removing oil from the gearbox and passing it through the heat exchanger in heat exchange relationship with the fuel therein,

a temperature sensitive device for sensing the temperature of the fuel at a location downstream of the heat exchanger, and,

means controlled by the temperature sensitive device for varying the level of the oil in the gearbox in order to vary the heat input to the oil due to churning of the oil by the gears thereby controlling the temperature of the fuel at the location of the temperature sensing device.

4,498,526

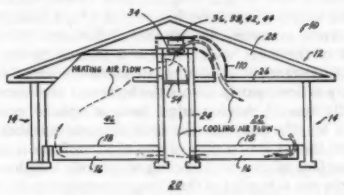
SOLAR EFFICIENT STRUCTURE

Frank B. Arenas, 5303 W. Kennedy, Tampa, Fla. 33609

Continuation-in-part of Ser. No. 319,789, Nov. 9, 1981,. This application Sep. 30, 1982, Ser. No. 430,965

Int. Cl.³ F28D *1/00;* **F24J** *3/02*

U.S. Cl. 165—45 **24 Claims**



1. A solar efficient structure including an attic and a ceiling operable to cool one or more rooms thereof, comprising in combination:

insulation means for thermally insulating the attic from the environment outside of the structure;

a chase;

first duct means positioned in thermal contact with the ground;

said first duct means being connected in fluid communication with at least one room of the structure and said chase;

perforated attic duct means connected in fluid communication with the room of the structure and the said chase;

fan means positioned to circulate air from said first duct means, through said chase, through said perforated attic duct means and into the room of the structure to return to said first duct means; and

said perforated attic duct means including a porosity sufficient to maintain the temperature within the attic to approximately equal to the temperature of the ground to assure that the ceiling functions as a radiant surface at a temperature approximately equal to the temperature of the ground.

4,498,527

HEAT-EXCHANGING ROLLER

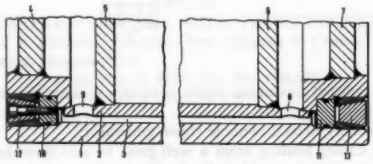
Wilhelm Gerarts; Gerd Thielen, both of Krefeld, and Eberhard Derichs, Steinrath 10, D-4150 Krefeld, all of Fed. Rep. of Germany, assignors to Eberhard Derichs, Krefeld, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 314,967

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040359

Int. Cl.³ F28D *11/02;* **F28F** *5/02;* **B60B** *7/06*

U.S. Cl. 165—89 **6 Claims**



1. An heat-exchanger roller, comprising:

(a) an outer substantially cylindrical casing having spaced ends;

(b) an inner substantially cylindrical casing having spaced ends, said inner casing ends generally aligned with said outer casing ends;

(c) an annular space between said casings adapted for flow therethrough of an heat exchange medium;

(d) each of said inner casing ends has a groove therein providing a radially extending support surface and an axially extending centering surface;

(e) each of said outer casing ends has a groove therein providing an axially extending centering surface aligned with the associated inner casing centering surface;

(f) another groove is disposed in said inner casing at each of said ends adjacent said inner casing centering surface and spaced from said associated support surface;

(g) centering ring means bounding said annular space at each of said ends and are engaged with and supported by said inner casing centering surface and said support surface and said outer casing centering surface;

(h) a lock washer is mounted in said another groove and is engaged with said centering ring means and holds said centering ring means against said support surface;

(i) first and second spaced lock washer means are associated with said ends of each of said casings, each of said lock washer means is supported by one of said inner and outer casings;

(j) each of said lock washer means has a conical surface thereof cooperating with and aligned with an associated conical surface of the adjacent lock washer means;

(k) a double clamping ring is disposed between said first and second lock washers at each of said ends, said double conical clamping ring is engaged with and supported by said conical surfaces of said lock washer means; and,

(l) screw means are associated with said clamping ring and engage said centering ring means for centering said inner and outer casings upon tightening of said screw means.

4,498,528

MEANS FOR HOLDING A FLAP WHICH IS ROTATABLY MOUNTED IN A CONDUIT, AND HOUSING CONTAINING SAID MEANS, FOR A VEHICLE AIR CONDITIONING INSTALLATION

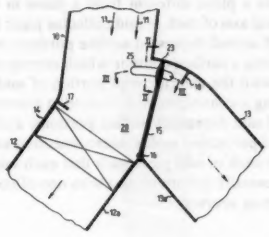
Maurice Jacquet, Maurepas, France, assignor to Valeo, Paris, France

Filed Feb. 28, 1983, Ser. No. 470,399

Claims priority, application France, Mar. 8, 1982, 82 03863

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—42 **5 Claims**



1. Means for holding a flap rotatably mounted in a conduit having a fluid such as air flowing therealong, in particular in an installation for heating, ventilating or air conditioning the cabin of a motor vehicle, wherein the conduit has a wall over which an edge of the flap moves when the flap rotates, and said wall has a rib or thickening suitable for cooperating by means of friction with said edge of the flap, said rib or thickening extending only over a portion of the travel of the edge of the flap with which it cooperates, said conduit forking into first and second branches, with the first branch containing a heat exchanger and the second branch being free, and with the flap being mounted to rotate between a first limit position in which it closes the first branch and a second limit position in which it closes the second branch, said rib or thickening extending only over a portion of the travel of the flap relatively close to said second limit position.

4,498,529

HEAT EXCHANGER

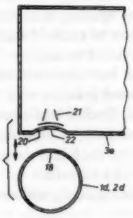
Jacques de Palézieux, Hauterive, and Georges F. Jobin, Cormondrèche, both of Switzerland, assignors to Runtal Holding Company S.A., Glarus, Switzerland

Filed Nov. 2, 1981, Ser. No. 317,492

Claims priority, application Switzerland, Nov. 20, 1980, 8586/80

Int. Cl.³ F28F *1/40, 9/00*

U.S. Cl. 165—176 **4 Claims**



1. A heat exchanger for exchanging heat with a fluid, comprising:

a plurality of flat, mutually parallel, spaced apart tubes each having a longitudinal axis, first and second end portions,

first and second depressed surface portions adjacent said first and second end portions, respectively, and an expanded wall portion formed about said first and second depressed surface portions;

a plurality of collector pipes for directing said fluid to and from said heat exchanger, each of said pipes having a longitudinal axis disposed perpendicular to said longitudinal axis of each one of said tubes and having a plurality of connecting apertures formed within a wall portion of each one of said pipes;

said longitudinal axis of each of said plurality of tubes being disposed in a plane different from a plane in which said longitudinal axis of each of said collector pipes is disposed;

said first and second depressed surface portions of said tubes each defining a surface contour which corresponds to and registers with the exterior wall portion of said pipes and each having a connecting port formed in a central portion of each of said depressed surface portions; and

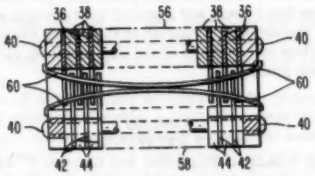
a plurality of projection welds interconnecting each of said tubes with each of said pipes such that each said connecting port coaxially communicates with one of said plurality of connecting apertures.

4,498,530

FLEXIBLE THERMAL CONDUCTION ELEMENT FOR COOLING SEMICONDUCTOR DEVICES

Lewis D. Lipschutz, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,025
Int. Cl.³ F28F 7/00
U.S. Cl. 165—185 **10 Claims**



1. A thermal bridge element for use in a semiconductor package to conduct heat from the back side of a solder bonded semiconductor device to a cold plate located in close proximity to the device, comprising,

a first set of flat, thin, flexible leaf elements, each leaf element having a thickness in the range of 0.2 to 5 mils,

a first flat spacer means spacing said first set of individual leaf elements, a portion of each of said leaf elements projecting beyond said spacer means,

means to hold said first leaf elements and said first spacer means in rigid laminated relation as a first unit,

a second set of flat, thin, flexible leaf elements with portions thereof disposed in slidable overlapping relation to said first set of leaf elements, each leaf element having a thickness in the range of 0.2 to 5 mils.

a second flat spacer means spacing said second set of individual leaf elements,

said second leaf elements having a portion that extends beyond said second spacer means,

a means to hold said second leaf elements and said second spacer means in rigid laminated relation as a second unit,

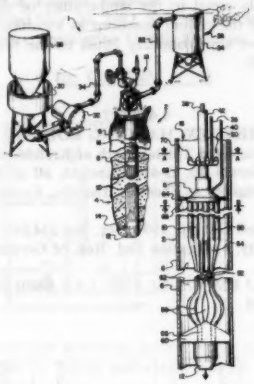
a spring means to bias said first and said second units in outwardly extending relation.

4,498,531

EMISSION CONTROLLER FOR INDIRECT FIRED DOWNHOLE STEAM GENERATORS

John J. Vrolyk, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 1, 1982, Ser. No. 432,179
Int. Cl.³ E21B 43/24
U.S. Cl. 166—59 **10 Claims**



1. An indirect downhole steam generator system comprising:

an indirectly fired downhole steam generator;

a well casing leading from a well head to said downhole steam generator, said well casing comprising a flue for directing a flow of exhaust gases from said downhole steam generator to said well head, said flow of exhaust gases containing pollutants;

an injector located within said well casing for injecting a suspension containing an alkaline reactant into said flow of exhaust gases; said suspension being carried along and mixed within said flow of exhaust gases and said alkaline reactant reacting with said pollutants to form a dispersed waste material;

means for supplying said suspension to said injector; and

means for collecting said waste material at said well head for removal.

4,498,532

PUMP DOWN TOOL AND CHECK VALVE

Charles E. Mason, Fairmont, W. Va., assignor to Conoco Inc., Ponca City, Okla.

Filed Apr. 18, 1983, Ser. No. 485,992
Int. Cl.³ E21B 23/08
U.S. Cl. 166—70 **3 Claims**

1. A device for use in pumping an instrument probe through a conduit, and in retrieving said probe from said conduit, said device comprising:

(a) a valve housing having a flow passage therethrough;

(b) a swab member extending from the exterior of said valve housing and adapted to prevent fluid flow between said valve housing and said conduit;

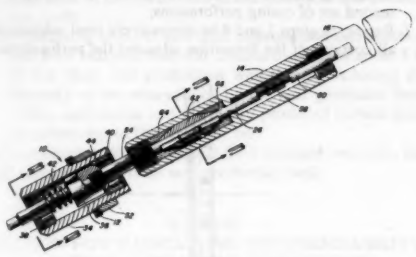
(c) a valve piston axially movable within said housing,

(d) front and rear stop members in said valve housing, said front stop member including valve seat means formed therein which prevents flow of fluid therethrough when said valve piston is seated thereagainst;

(e) a flexible cable extending through said valve housing, said flexible cable being connected to a probe cable extending from said probe, and said flexible cable being adapted to move longitudinally with said valve piston in said valve; and

(f) connector means including a connector housing, said

connector housing including clamp means therein for gripping said flexible cable, said connector housing further enclosing cable connector means for joining said



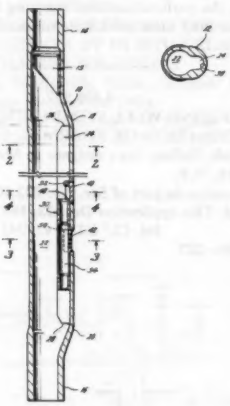
flexible cable and said probe cable, and said connector housing being attached to said valve piston by a connector stub threaded into said piston and said connector housing.

4,498,533

KEYHOLE MANDREL WITH INSERT POCKET

Russell A. Johnston, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Mar. 5, 1984, Ser. No. 586,491
Int. Cl.³ E21B *23/03*
U.S. Cl. 166—117.5 **5 Claims**



1. A sidepocket mandrel for use in a well comprising,

a one piece body section having a keyhole cross section extending from one end of the body to the other end of the body, said keyhole cross section shape forming an open bore extending therethrough for aligning with ends, and forming a smaller offset bore adjacent the open bore,

a one piece integral insert having a locking shoulder and a sidepocket, said pocket adapted to receive flow control devices, and said shoulder adapted to coact with a well lock for securing said flow control devices in the sidepocket,

said body including at least one opening extending into the offset bore for welding the insert to the body,

said insert positioned in the offset bore in the lower portion of the body whereby the upper portion of the offset bore functions as a discriminator for allowing the entrance of flow control devices but preventing the entrance of open bore tools in the offset bore, and

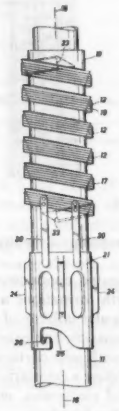
end members connected to said body, said members adapted to receive connections for connection in a well tubing.

4,498,534

LINER HANGER ASSEMBLY

Hiram E. Lindsey, Jr., Midland, Tex., assignor to MWL Tool and Supply Company, Midland, Tex.

Filed Sep. 26, 1979, Ser. No. 79,037
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—208 **4 Claims**



1. A liner hanger assembly for use in hanging a tubular string of pipe in a tubular casing in a well bore comprising:

tubular anchor body means adapted for connection to a tubular string of pipe, said tubular body means having an outer diameter sized relative to the inner diameter of a casing in a well bore to provide an annular clearance space therebetween, said tubular body means having a spiral surface along its length and disposed in said clearance space, said spiral surface extending outwardly toward an inner wall of a cased well bore, said spiral surface in vertical cross-section having a tapered configuration between an upper, outwardly extended shoulder portion and a lower outer diameter portion of said body means where the vertical space between a shoulder portion and the outer diameter portion of said body means above a shoulder portion defines a spiral bypass around the body means thereby to permit the clearance space to define a longitudinal fluid passageway, said spiral bypass being sized in cross-section to pass fluid and bore cuttings;

slip means on said body means, said slip means being constructed and arranged for anchoring engagement with the wall of a tubular member, said slip means being comprised of a spiral element of material having outer, serrated surface gripping means and inner tapered surface means disposed on said spiral surface on said body means so as to extend along the length of said body means within said clearance space;

said slip means being movable upon relative longitudinal movement between said body means and said slip means between an unset condition where the outer gripping means are proximate to but not in engagement with a cased well bore and a set condition where said gripping means are in gripping engagement with a cased well bore; and

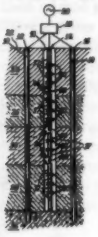
means for selectively permitting relative longitudinal movement between said body means and said slip means.

4,498,535

APPARATUS AND METHOD FOR IN SITU CONTROLLED HEAT PROCESSING OF HYDROCARBONACEOUS FORMATIONS WITH A CONTROLLED PARAMETER LINE

Jack E. Bridges, Park Ridge, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Nov. 30, 1982, Ser. No. 445,672
Int. Cl.³ E21B *43/24, 36/04*
U.S. Cl. 166—248 **22 Claims**



1. A system for preferential in situ heating of earth formations comprising:

a plurality of elongated conductive electrodes emplaced in boreholes in earth formations in respective spaced rows bounding a particular volume of said earth formations and forming a transmission line extending in the direction of said electrodes with said particular volume of said earth formations providing a dielectric medium between respective said rows of electrodes, each electrode being in a different respective borehole,

means for supplying electromagnetic energy to said transmission line at a frequency at which the spacing between respective said rows is less than about twice the skin depth at the frequency of said applied energy, and

reactance means disposed along respective said electrodes to provide predetermined effective transmission line characteristics for developing a predetermined heating pattern in said earth formations.

4,498,536

METHOD OF WASHING, INJECTING SWABBING OR FLOW TESTING SUBTERRANEAN WELLS

Richard J. Ross, and David J. Speller, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Oct. 3, 1983, Ser. No. 538,118
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—250 **3 Claims**

1. The method of chemical treatment and testing of the formation in a production zone adjacent to the well casing perforations by a single trip of a tubing string into the well comprising the steps of:

1. Assembling a circulating washer tool in series relation to a tubing carried resettable packer, said washer having a pair of vertically spaced packing elements expandable by tubing applied fluid pressure into sealing engagement with the casing bore to isolate an axially extending group of perforations;
2. Inserting the assembled washer, packer and tubing string into the well until the expandable packing elements on the washer straddle a selected group of casing perforations and the packer is positioned above all of the casing perforations;
3. Setting the packer to isolate the casing annulus below the packer from the surface;
4. Applying pressurized chemical treatment fluid down the tubing string to expand the expandable packing elements on the washer into sealing engagement with the casing bore and injecting said pressurized chemical treatment fluid into the formation adjacent the isolated casing perforations;
5. Reducing the tubing pressure;
6. Unsetting the packer and moving the washer adjacent a second set of casing perforations;
7. Repeating steps 3 and 4 to successively treat substantially all portions of the formation adjacent the perforations;

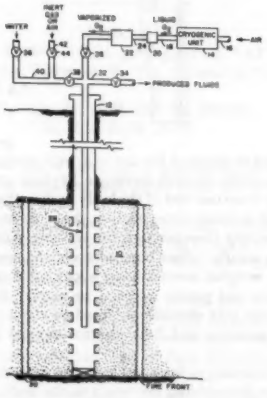
8. Reducing the tubing string fluid pressure to retract the washer packing elements;
9. Unsetting the packer and moving the entire assembly above the perforations and resetting the packer; and
10. Performing a test to indicate the production flow into the washer.

4,498,537

PRODUCING WELL STIMULATION METHOD - COMBINATION OF THERMAL AND SOLVENT

Evin L. Cook, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 232,107, Feb. 6, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,854
Int. Cl.³ E21B *43/243*
U.S. Cl. 166—257 **19 Claims**



1. A method for stimulating the recovery of oil from a subterranean reservoir having a relatively heavy crude oil, into which has been drilled at least one production well which comprises the steps of:

(a) injecting a fluid containing at least 75% by volume of oxygen into said reservoir through said production well to initiate an in-situ combustion zone containing a high concentration of carbon dioxide in the vicinity of said production well;
(b) continuing to inject said fluid to propagate said combustion zone into said reservoir a radial distance of about 5 to 50 feet from said production well thereby reducing the viscosity of the reservoir oil by the heat generated from in-situ combustion and the in-situ produced carbon dioxide dissolving in the reservoir oil;
(c) terminating the flow of said fluid into said reservoir; and
(d) recovering oil from said production well.

4,498,538

METHOD FOR MAINTAINING THE PERMEABILITY OF FINES-CONTAINING FORMATIONS

David R. Watkins, Irvine, and Leonard J. Kalfayan, Pasadena, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Jun. 21, 1983, Ser. No. 506,537
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—295 **37 Claims**

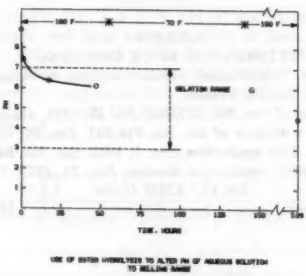
37. A method for treating a subterranean formation which contains formation fines, to minimize impairment of formation permeability due to the the presence of the formation fines, comprising, without drying said formation, injecting into said formation about 0.5 to 100 gallons per vertical foot of formation to be treated a composition consisting essentially of γ-aminopropyltriethoxysilane.

4,498,539

SELECTIVE PLUGGING OF HIGHLY PERMEABLE SUBTERRANEAN STRATA BY IN SITU GELATION OF POLYMER SOLUTIONS

Donald D. Bruning, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 16, 1983, Ser. No. 552,558
Int. Cl.³ E21B *43/22, 43/20, 33/138*
U.S. Cl. 166—294 **28 Claims**



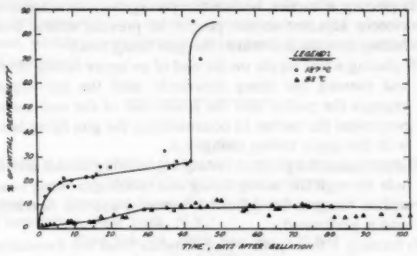
11. A process of controlling sweep efficiency in a subterranean formation which comprises the sequential injection of effective quantities of:
(1) an aqueous preflush slug to adjust connate water salinity,
(2) an in situ gelable aqueous thickened slug comprising a sequestered polyvalent metal cation, a gelable polymeric viscosifier, and a hydrolyzable pH-reducing organic ester, and
(3) an aqueous drive fluid;
wherein said ester is a hydrolyzable-pH-adjusting ester effective to decrease in situ of the pH of said thickened slug so as to trigger delayed in situ gelation of the thickened slug thus effecting preferential decrease in water permeability of the otherwise highly permeable thief zones.

4,498,540

GEL FOR RETARDING WATER FLOW

Matthew L. Marrocco, Santa Ana, Calif., assignor to Cities Service Oil and Gas Corporation, Tulsa, Okla.

Filed Jul. 18, 1983, Ser. No. 514,557
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—295 **70 Claims**



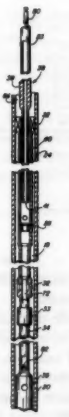
1. A process for retarding the flow of water in a subterranean zone comprising introducing an effective amount of a gel-forming composition into a subterranean zone, said gel-forming composition being operable when gelled in said zone for retarding the flow of water therein, said gel-forming composition being formable into a gel in the presence of an acidic catalyst from
i. an aqueous solution comprising a first substance selected from the group consisting of polyvinyl alcohol, a polyvinyl alcohol copolymer, and mixtures thereof, and
ii. a second substance comprising an aldehyde.

4,498,541

METHOD OF WELL COMPLETION

Emmet F. Brieger, Albuquerque, N. Mex.; Flint R. George, and Edward A. Colle, Jr., both of Katy, Tex., assignors to GEO Vann, Houston, Tex.

Continuation of Ser. No. 490,295, May 2, 1983,. This application Mar. 19, 1984, Ser. No. 590,680
Int. Cl.³ E21B *43/116*
U.S. Cl. 166—297 **15 Claims**



1. Method of completing a formation located downhole of a borehole, comprising the steps of:
(1) locating a perforating gun downhole in the borehole adjacent to the formation to be completed by using a lower tubing string for connecting the perforating gun in

underlying relationship relative to a packer device and setting the packer device at the appropriate elevation downhole in the borehole; and, providing a gun firing head at the upper end of the gun for detonating the charges of the gun;

(2) forming a passageway which extends through the packer and to the gun firing head;

(3) placing a barrier within the passageway at a location closely adjacent to the packer to prevent debris from falling downhole towards the gun firing head;

(4) placing a seal nipple on the end of an upper tubing string and running the string downhole until the seal nipple engages the packer and the lower end of the seal means penetrates the barrier to communicate the gun firing head with the upper tubing string;

(5) detonating the gun by running a gun firing device downhole through the tubing string and to the gun firing head so that the gun firing head is actuated and the borehole wall is perforated;

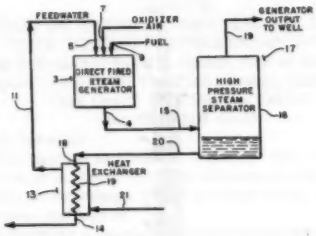
(6) forming a flow path which extends from the formation through the perforations, into the lower annulus, into the lower tubing string at a location below the packer, up through the packer and the upper tubing string, and to the surface of the ground where the production can be gathered.

4,498,542

DIRECT CONTACT LOW EMISSION STEAM GENERATING SYSTEM AND METHOD UTILIZING A COMPACT, MULTI-FUEL BURNER

Stephen Eisenhawer, Albuquerque; Anthony J. Mulac, Tijares; A. Burl Donaldson, and Ronald L. Fox, both of Albuquerque, all of N. Mex., assignors to Enhanced Energy Systems, Albuquerque, N. Mex.

Filed Apr. 29, 1983, Ser. No. 489,829
Int. Cl.³ E21B *43/24, 43/34*
U.S. Cl. 166—303 **7 Claims**



1. A method for thermal stimulation of existing petroleum wells comprising the steps of;

generating a first mixture of combustion products in a high pressure combustor having fuel and oxidizer inlets, and an outlet for delivery of said products;

generating a second mixture of steam and combustion products in a steam generator having a feedwater inlet, an inlet for receiving said combustor combustion products, adjacent said combustor outlet, and an outlet;

separating said water, and other combustion products from said second mixture, forming a third mixture of steam and combustion gases;

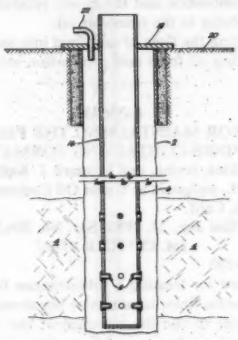
injecting said third mixture into said petroleum well in order to enhance crude oil output.

4,498,543

METHOD FOR PLACING A LINER IN A PRESSURIZED WELL

David S. Pye, Indio; Donald L. Ash, and Robert W. Rardin, both of Santa Rosa, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 25, 1983, Ser. No. 488,105
Int. Cl.³ E21B *43/10*
U.S. Cl. 166—376 **12 Claims**



1. A method for placing a perforated liner in a well penetrating a reservior containing a high pressure fluid comprising:

(a) inserting, into openings in the sidewall of the liner, solid hollow plugs capable of withstanding a pressure differential wherein the pressure on the outside of the liner is greater than the pressure on the inside of the liner, said plugs each having a head end protruding into the interior of the liner and a flange portion in contact with the exterior of the liner;

(b) running the plug-containing liner into the well; and

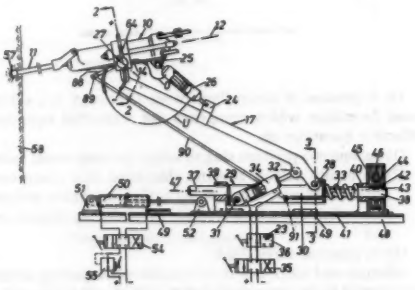
(c) running a cutting or scraping tool down the inside of the liner to remove the heads of the plugs and open the openings in the liner.

4,498,544

METHOD FOR ROCK DRILLING

Alexis Molin, Saltsjöbaden, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Continuation of Ser. No. 287,056, Jul. 27, 1981, abandoned, which is a division of Ser. No. 916,492, Jun. 19, 1978, abandoned. This application Oct. 7, 1983, Ser. No. 540,094
Claims priority, application Sweden, Jun. 21, 1977, 7707139
Int. Cl.³ E21B *15/04*
U.S. Cl. 173—1 **13 Claims**



1. A method for feeding a drilling tool during rock drilling

by means of a rock drilling machine equipped with a drill steel, said rock drilling machine being carried swingably with respect to a drill boom and a boom support, said rock drilling machine being pivotally connected to said drill boom,

the method comprising the steps of:

starting drilling a hole with the pivotal connection in a position maintaining the drilling machine and drill steel in alignment with the desired drilling axis;

moving during continued drilling said boom laterally by power so as to produce by lateral displacement thereof a main feeding movement of said pivotal connection;

simultaneously with said moving step, taking alignment with the drilled hole and the drilling axis at the hole penetrating portion of said drill steel while permitting the drilling machine to pivot about said pivotal connection relative to the drilling axis;

simultaneously with said moving step producing a corrective feeding movement of said pivotal connection by positioning said drilling machine angularly relative to the drilled hole and to the drill boom about said pivotal connection by a pressure fluid driven positioning motor connected to the drill boom;

maintaining said rock drilling machine, during said continued drilling, at a fixed distance to said pivotal connection of said rock drilling machine to said drill boom;

and simultaneously with said moving step, further governing said corrective feeding movement via the positioning motor by means of a servo control system so as to cause, by correction of said angular positioning said drilling machine to remain on the drilling axis;

said correction step comprising:

(a) feeding the angular position in space of the rock drilling machine as an actual angle value to the servo control system;

(b) feeding a fixed angular direction which is parallel with the direction of the drilling axis as a set angle value for the drilling machine to the servo control system; and

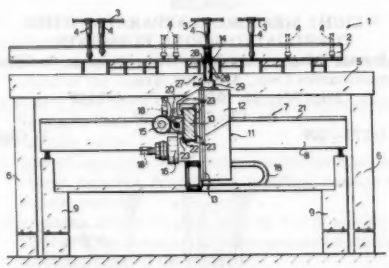
(c) continuously governing the positioning motor by means of the servo control system such that the positioning motor causes said actual angle value to coincide with said set angle value.

4,498,545

AUTOMATIC DEVICE FOR TIGHTENING BOLTS

Fabrizio Grassi, and Luigi Iannarelli, both of Turin, Italy, assignors to Prima Progetti S.p.A., Turin, Italy

Filed Jul. 2, 1982, Ser. No. 394,714
Claims priority, application Italy, Jul. 6, 1981, 67935 A/81
Int. Cl.³ B25B *13/50*
U.S. Cl. 173—43 **6 Claims**



1. An automatic bolt tightening device for assembling mechanical member placed on a buck arranged above said tightening device, comprising:

(a) a headstock which is translatable along three mutually perpendicular axes;

(b) a spindle arranged on and rotatable with respect to said headstock;

(c) a plurality of actuating means which control the translation of said headstock and the rotation of said spindle;

(d) a processing means for controlling said actuating means;

(e) reference means for indicating the position of bolts to be tightened on said members; and

(f) first sensor means for sensing engagement with said reference means,

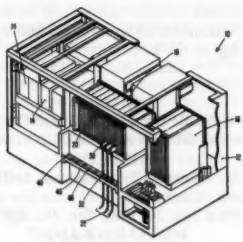
wherein in response to engagement of said reference means, said first sensor means outputs error signals to said processing means, which in turn controls said actuating means to translate said headstock.

4,498,546

APPARATUS FOR LIMITING ELECTROMAGNETIC INTERFERENCE RADIATION

Thomas D. Peterson, Coon Rapids, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,685
Int. Cl.³ H05K *9/00*
U.S. Cl. 174—35 R **12 Claims**



1. Apparatus for limiting electromagnetic interference radiation from a housing containing sources of electromagnetic radiation comprising:

a cable extending through the housing, said cable having a plurality of conductive strands, and an electrically conductive shield member surrounding said conductive strands;

an electrically conductive cable retainer bar electrically connected to the housing; and

an electrically conductive adapter ring carried by the cable, said ring having a first portion electrically coupled to said shield member, and a second portion in electrical contact with said cable retainer bar, whereby electromagnetic radiation picked up by said shield member within the housing is substantially drained through said adapter ring and said cable retainer bar to the housing.

4,498,547

EARTH SOIL SAMPLER

Wayne Herkness, II, Box 511, Lewisburg, W. Va. 24901

Filed Dec. 22, 1983, Ser. No. 564,503
Int. Cl.³ E21B *25/02*
U.S. Cl. 175—244 **8 Claims**

1. An earth soil sampler for the probing extraction and containment of multiple samples of soil, comprising:

(A) a rigid shaft which is of substantial mass, relative to the overall sampler;

(B) an elongated bottle retainer secured to one end of the shaft, said retainer mounting

(B_1) shock-resistant bottle securing means intermediate ends of the retainer and

(B_2) a hollow probe in extension of the lower end of the

retainer, said probe having interconnection with the retainer interior of the retainer;

(C) a removable sampler bottle held in shock-resistant inverted containment by the retainer and in coactive in-feed relationship to the hollow probe.

4,498,548

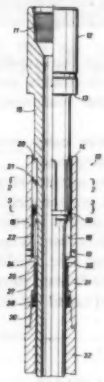
WELL JAR INCORPORATING ELONGATE RESILIENT VIBRATION SNUBBERS AND MOUNTING APPARATUS THEREFOR

Chuan C. Teng, Houston, Tex., assignor to Dailey Petroleum Services Corp., Conroe, Tex.

Filed Jun. 20, 1983, Ser. No. 505,981

Int. Cl.³ E21B *31/107*

U.S. Cl. 175—299 **17 Claims**



1. A rotary well jar subject to severe lateral and longitudinal drill string forces in a fluid-filled wellbore wherein the well jar has an elongate body with an axial passageway for fluid flow, the body having threaded connections at its ends for assembly in a string of pipe, the body having an annulus exposed to well fluid between a mandrel and barrel, the annulus defining an elongate fluid receiving chamber and wherein an impact between hammer and anvil surfaces on the mandrel and barrel jars the pipe, the rotary well jar comprising:

(a) a plurality of elongate resilient vibration snubbers supported externally of said mandrel at an upper end of said annulus and internally of said barrel;

(b) longitudinal groove means receiving said snubbers and said groove means are undercut to define a locking means securing said snubbers therein after insertion and said groove means terminate at a narrow neck;

(c) said snubbers slidably engaging between said barrel and said mandrel through relative telescoping movement;

(d) said snubbers disposed in circumferential spaced relationship about said annulus forming flow channels therebetween in said annulus; and

(e) said snubbers having an exposed surface for engaging a surrounding inner surface to dampen vibration and permit telescoping movements between said mandrel and said body.

4,498,549

CUTTING MEMBER FOR ROTARY DRILL BIT

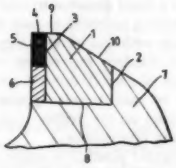
Rainer Jürgens, Altencelle, Fed. Rep. of Germany, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Mar. 15, 1982, Ser. No. 358,079

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111156

Int. Cl.³ E21B *10/56*

U.S. Cl. 175—329 **2 Claims**



1. A cutting member for rotary drill bits comprising a carrier member having a supporting surface, to which is connected a back surface of a supporting member of hard metal having on its front surface a cutting layer having an exposed front surface and a cutting edge and consisting of polycrystalline synthetic diamond material, and in which the supporting member together with its cutting layer occupies only a portion of the supporting surface of the carrier member and that the remaining supporting surface of the carrier member is occupied by supplementary member of hard metal or other high-strength substances having a free exposed front surface extending the front surface of the cutting member and in which the supplementary member has a shape which complements the supporting member together with the cutting layer to form a complete circular face.

4,498,550

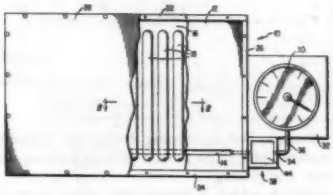
WEIGHT MEASURING APPARATUS WITH CORRUGATED SPRING ELEMENTS

Narendranath Menon, Arlington, Tex., assignor to General Electrodynamics Corp., Arlington, Tex.

Filed May 23, 1983, Ser. No. 497,149

Int. Cl.³ G01G *5/04*

U.S. Cl. 177—209 **21 Claims**



1. An apparatus for measuring weight, comprising:

a base having a planar upper surface;

a layer of elastically deformable material disposed on the planar surface of said base, said deformable layer having a plurality of concavities formed therein protruding outward from said base, the inner surface of said concavities and the planar surface of said base forming a plurality of deformable chambers;

channel means for communicating with said deformable chambers to form a common reservoir;

said deformable chambers and said channel means filled with a fluid;

a load bearing layer disposed on the outer surface of said concavities for receiving the weight to be measured, said load bearing layer deforming said deformable chambers such that the volume of said deformable chambers is altered; and

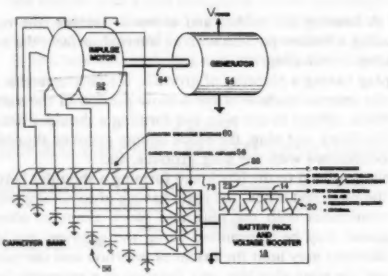
means for measuring a physical characteristic of said fluid in said deformable chambers as a function of the deformation of said deformable chambers resulting from the weight applied to said load bearing layer and converting the measured physical characteristic of said fluid to a weight measurement.

4,498,551

BATTERY-DRIVEN VEHICLE AND RECHARGING SYSTEM

Dominic S. Arbisi, 13001 Berkshire Dr., Minnetonka, Minn. 55343

Filed Sep. 29, 1982, Ser. No. 427,839
Int. Cl.³ B60K *7/00*
U.S. Cl. 180—65.5 **1 Claim**



1. A battery-driven vehicle comprising,

a wheeled vehicle,

at least one combination motor/generator set mounted on a wheel of the vehicle,

a battery pack and a DC to DC voltage booster component forming a basic power source,

an impulse motor,

a bank of capacitors with charge control switches and discharge switches providing a pulsating current to said impulse motor,

a generator driven by said impulse motor and supplying current to the motor of the wheel-mounted motor/generator set for driving the wheel,

a microprocessor controlling the current flow from said generator and to said battery pack during charging from the wheel mounted recharging generator, depending upon the position of the accelerator switch,

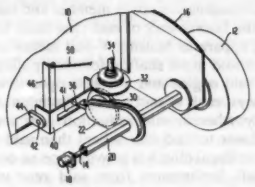
said accelerator control including means for converting the motor/generator unit to a generating mode through said microprocessor control system whenever the accelerator pedal is released and the battery pack requires charging.

4,498,552

LAWN MOWER FRICTION DRIVE MECHANISM

Russell V. Rouse, Conyers, Ga., assignor to Snapper Power Equipment, Division of Fuqua Industries, Inc., McDonough, Ga.

Filed Mar. 31, 1983, Ser. No. 480,905
Int. Cl.³ F16H *15/08*; B62D *51/04*
U.S. Cl. 180—70.1 **21 Claims**



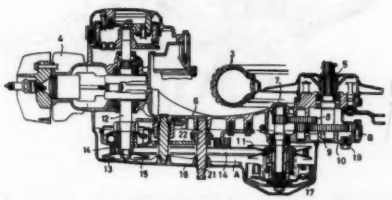
1. A friction drive mechanism comprising in combination, a rotatable driving member having a driving surface, a rotatable driven member to be driven by the driving member and extending in a plane generally at right angles to the driven surface, said driven member having a peripheral surface and a ring concentrically mounted on the peripheral surface for movement relative thereto, said ring having an outer peripheral surface tangentially engageable with said driving surface and said ring having an inner surface engageable with the peripheral surface of the driven member, and wherein the coefficient of friction between the driving surface and said outer surface of the ring and the coefficient of friction between the inner surface of the ring and the peripheral surface of the driven member is such that upon initial engagement with the driving surface, the ring will be rotatable relative to the driven member.

4,498,553

POWER TRANSMISSION CASING APPARATUS IN MOTORIZED TWO-WHEELED VEHICLE

Noboru Kurata, Kamifukuoka; Kunio Miyazaki, Saitama, and Kuniyuki Yamamoto, Kodaira, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 408,685, Aug. 16, 1982, , which is a division of Ser. No. 178,942, Aug. 15, 1980, Pat. No. 4,344,500. This application Apr. 5, 1983, Ser. No. 482,204
Claims priority, application Japan, Aug. 21, 1979, 54-105543
The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.
Int. Cl.³ B62D *7/00*
U.S. Cl. 180—230 **3 Claims**



1. A power transmission casing apparatus in a motorized two-wheeled vehicle comprising:

a case main body extending from one lateral side of an internal combustion engine to one lateral side of a rear wheel positioned rearwardly of said engine, said case main body being partitioned into front and rear casing sections and having a longitudinally extending lateral wall, said rear casing section rotatably supporting a wheel axle of said rear wheel and having a recessed portion for partially

housing a reduction gear means which includes said wheel axle, an unput shaft, and a gear train operatively interconnecting said input shaft to said wheel axle,

a transmission cover member sealingly engaging at least a portion of the lateral wall of said case main body to cover the recessed portion thereof in a fluid tight manner; and

a V-belt cover sealingly engaging said case main body;

said case main body including on the lateral wall thereof transverse projections which extend to such a position that said transmission cover member and said V-belt cover engage the lateral wall of said case main body;

said casing apparatus housing V-belt means including a rear pulley on said input shaft, a forward pulley on an output shaft of said engine and a V-belt operatively connecting said pulleys, each of said pulleys having a circumferential periphery wherein said reduction gear means are positioned closer to said rear wheel than said V-belt means, and a centrifugal clutch is provided on an outer end of said input shaft furthermost from said rear wheel via said reduction gear means and said V-belt means;

wherein said transmission cover member extends to enclose said reduction gear means to form a wet type chamber to hold a lubricant to immerse said reduction gear means; and

wherein said V-belt cover extends from beyond the forwardmost portion of the periphery of said forward pulley to beyond the rearmost portion of the periphery of said rear pulley to enclose said V-belt means for form a dry type chamber;

said case main body being integrally provided at the front casing section thereof with an engine casing to form a power unit with said transmission cover member and said V-belt cover, the power unit being swingably mounted on the vehicle body; and

said V-belt cover and said transmission cover member being both on the same side of said case main body in an opposed relation to said engine and said rear wheel.

4,498,554

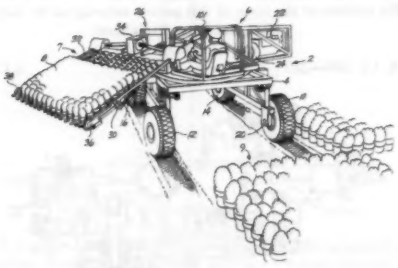
HIGHLY MANEUVERABLE PRIME MOVER

Roy E. Young, Clemson University, Agricultural Engineering Dept., Clemson, S.C. 29631; Douglas K. Stricklin, 170 Lilac Ln., Brea, Calif. 92621, and Henry M. W. Givens, 3818 So. K St., Tacoma, Wash. 98405

Filed May 3, 1982, Ser. No. 374,226

Int. Cl.³ B62D *5/00*

U.S. Cl. 180—236 **37 Claims**



1. A highly maneuverable prime mover which comprises:

a. a main frame;

b. rotatable turret means mounted on the frame;

c. means to supply motive and control power to the prime mover wheels and turret;

d. means for mounting an operating tool head on the turret means;

e. four supporting drive wheels mounted in a spaced rectangular relationship on the frame;

f. steering arm means operatively connected to each wheel;

g. mode shifting means acting on the steering arm means, said shifting means adapted to shift each wheel through a 90° horizontal arc between a first position and a second position orthogonal to the first; and

f. steering means operating on the steering arms to control direction of travel by Ackermann steering at least one side-by-side wheel pair when the wheels are in the first position, the mode shifting means serving as a linkage between the steering means and steering arm means, said prime mover being adapted for skid steering or hybrid steering when the wheels are in the second position, wherein said hybrid steering involves steering only a single wheel of one pair.

4,498,555

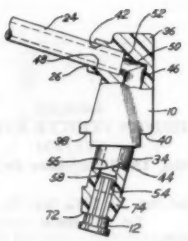
HEARING AID NUBBIN AND ACOUSTIC DAMPER

Elmer J. Cerny, Des Plaines, Ill., assignor to Beltone Electronics Corporation, Chicago, Ill.

Filed Mar. 30, 1983, Ser. No. 480,411

Int. Cl.³ H04R *25/02*

U.S. Cl. 181—129 **15 Claims**



1. A hearing aid nubbin and acoustic damper, the nubbin including a hollow portion with an internal surface, the acoustic damper including,

a plug having a plurality of grooves, the plug mateable with the internal surface of the hollow portion of the nubbin;

a block, affixed to the plug and forming a shoulder between the block and plug, the block having grooves aligned and continuous with the plug grooves; and

a plate, affixed to the block and forming a shoulder between the plate and block, the plate having grooves aligned and continuous with the plug and block grooves, whereby sound may be transmitted along the grooves, the block shoulder may limit the extent of insertion into the nubbin, and the plate shoulder may function as a graspable flange for removal of the damper from the nubbin.

4,498,556

VERTICALLY MOVABLE, ROAD TOWABLE WORK PLATFORM

John W. Garton, Purston, nr. Pontefract, England, assignor to Access Engineering Ltd., England

Filed Feb. 15, 1983, Ser. No. 466,501

Claims priority, application United Kingdom, Sep. 11, 1982, 8225960

Int. Cl.³ E04G *1/18*

U.S. Cl. 182—19 **7 Claims**

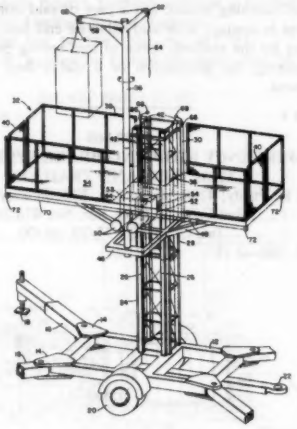
1. Apparatus comprising, in combination,

a wheeled chassis having a vertically extending mast section secured thereon, the mast section having a pair of parallel vertical racks secured thereto,

a platform having an aperture partially surrounding said mast section and being vertically displaceable thereon, the platform and mast section having mutually cooperative parts comprising a normally closed top working limit switch operable when the platform is elevated to a predetermined position on the mast,

a pair of mutually independent drives on the platform each comprising an electrical motor, a reduction gear train driven by the motor and a pinion driven by said gear train and engaging a separate one of said racks, and

a control circuit comprising terminals for connection to a source of electrical power, a circuit breaker having contacts connected to each of said terminals, a raise coil and a lower coil each having contactors connecting between the circuit breaker contacts and said motors, said motors being connected in parallel, the contactors of said coils being connected for opposite directions of rotation of the motors, and a coil energizing circuit including a normally energized lead and a pair of circuits extending therefrom to the raise and lower coils respectively, said circuit to the raise coil including said normally closed top working limit switch.



4,498,557

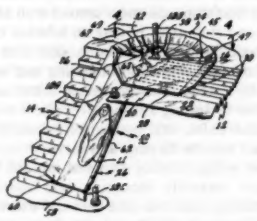
EMERGENCY ESCAPE APPARATUS AND METHOD OF USING SAME

June B. Horne, 1713 W. 90th St., Chicago, Ill. 60620

Filed Jun. 20, 1983, Ser. No. 506,106

Int. Cl.³ A62B *1/20*

U.S. Cl. 182—49 **7 Claims**



1. Emergency escape apparatus adapted to be used with a staircase adjacent to an upright railing or the like, comprising:

slide means adapted to be installed at the staircase, said slide means including an elongated slide member for extending at an incline over the staircase when disposed in a use position;

hinge means connected at one side edge of said slide member to enable it to swing upwardly about said hinge means into an upright storage position adjacent to the railing or the like;

mounting means for fixing said slide means to said staircase;

latching means for maintaining said slide member in its upright storage position in a releasable manner, wherein the first-mentioned staircase is disposed in a vertically displaced position adjacent to a second staircase in a side-by-side manner to provide a continuous inclined path of travel along the first-mentioned staircase over a horizontal landing and from there along the second staircase; and further includes second slide means for installation at the second staircase, landing slide means for installation at the landing to provide a continuous substantially uninterrupted path of travel between the first-mentioned and the second slide means when disposed in their use positions, wherein said landing slide means includes a series of landing slide members for extending over the landing surface flat thereagainst, said landing slide members being disposed in overlapping positions, wherein said landing slide means includes hinge means connecting the side edges of said landing slide members to enable said landing slide members to swing upwardly about said hinge means into an upright storage position adjacent to the railing or the like; said hinge means is connected to the landing; and latching means maintains each one of said landing slide members in their upright storage positions in a releasable manner; and a plurality of socket means mounted fixedly in the landing, and a plurality of corresponding studs mounted individually on each one of the landing slide members to engage the respective socket means when the landing slide members move into their horizontal use positions.

4,498,558

CABLE LUBRICATING DEVICE

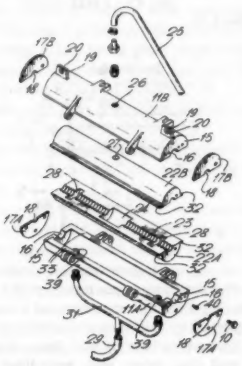
Samuel H. Bendahan, London, England, assignor to Dynalube Holdings Limited, Jersey Channel Islands, England

Filed Nov. 22, 1982, Ser. No. 443,718

Claims priority, application United Kingdom, Mar. 2, 1982, 8206014; Jun. 18, 1982, 8217767

Int. Cl.³ F16N *11/00*

U.S. Cl. 184—15.1 **7 Claims**



1. A cable lubricating device for greasing wire ropes and cables comprising:

a cylindrical housing formed of two generally semi-cylindrical half-housings that fit together at a diametrical axial plane of the housing,

said two half-housings being designed and arranged to fit together around a wire cable, the cable travelling axially through said housing,

clamps for clamping said two half-housings together,

a center grease-application chamber within the housing having a larger diameter than the cable,

said cable passing through the center grease-application chamber,

a grease supply line connected to said center grease-application chamber,

a first and a second seal in the housing in axial alignment with said center grease-application chamber, said first and said second seals defining opposite ends of said center grease-application chamber,

said cable passing through said seals when the cable enters and leaves said center chamber, and

two further chambers in the housing located axially outward of said first and second seals to collect surplus grease escaping through the seals, said seals defining inner ends of said further chambers,

a grease return line communicating with said further grease-collecting chambers,

wherein each said seal is moulded of elastomeric material with an internal profile contacting the cable and consists of two seal portions, one of said portions on each side of said diametrical, axial plane,

said two seal portions being substantially in the form of two matching halves, said halves comprising an internal triangular section thread with thread peaks and valleys, the thread directions of the two seal portions being mutually reversed from one another,

the diameter of the thread valleys being greater than the maximum diameter of the cable,

the diameter of the thread peaks being substantially equal to the maximum diameter of the cable whereby the threads of said seals contact the cable at the peaks of the threads only.

4,498,559

FRICTION-PAD WEAR-LIMIT WARNING DEVICE FOR DISC BRAKES

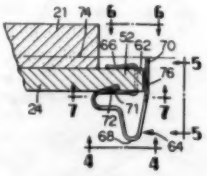
Masayoshi Katagiri, Toyota, and Toshio Kondo, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of, Japan

Filed Apr. 14, 1982, Ser. No. 368,412

Claims priority, application Japan, Oct. 27, 1981, 56-159753[U]; Oct. 27, 1981, 56-159754[U]

Int. Cl.³ F16D *63/00*

U.S. Cl. 188—1.11 **13 Claims**



1. A friction-pad wear-limit warning device for a disc brake including a disc rotor, a torque member and a pair of friction pads each having a friction member and a backing plate fixed thereto, supported by said torque member and forced against the mating friction surface of said disc rotor for restraining rotation of said disc rotor, said wear-limit warning device generating a warning sound when a wear limit of said friction member is reached, said warning device comprising:

a projection protruding sideways from a sidewise end face of said backing plate; and

a warning member made from a sheet material which has: a mounting leg portion gripping a sidewise end portion of said backing plate on both front and rear sides thereof and further gripping said projection on both upper and lower sides thereof; a contact portion extending along and being in contact with a sidewise end face of said projection with a free end of said contact portion reaching a wear limit level of said friction member; and a spring portion connecting said contact portion to said mounting leg portion and generating a resilient force, said contact portion being pressed against said sidewise end face of said projection by the resilient force of said spring portion and being forced away from said mounting leg portion by said projection, whereby, when said wear limit of said friction member is reached, said free end of said contact portion comes into contact with said mating friction surface of the rotating disc rotor and said contact portion vibrates, generating said warning sound, but a part of said contact portion is kept in contact with said sidewise end face of said projection by the resilient force of said spring portion, thereby assuring the generation of a stable and clear warning sound.

4,498,560

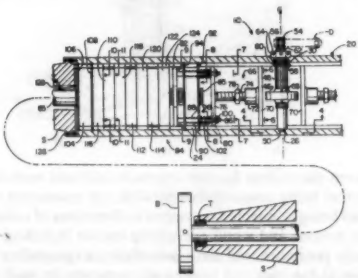
EMERGENCY STOPPING BRAKE SYSTEM FOR TRACTORS AND TRAILERS

Ronald R. Purdy, 4288 Manor La., Ellicott City, Md. 21043

Filed Feb. 28, 1983, Ser. No. 470,765

Int. Cl.³ F16D *55/38, 66/00*

U.S. Cl. 188—1.11 **9 Claims**



1. In a system for braking vehicle axle-attached wheels and including a stub-axle-in-housing mechanism, a first array of discs, a second array of discs, first means for attaching a first plurality of discs of each of said first and second arrays of discs to said axle, second means for attaching a second plurality of discs of each of said first and second arrays of discs to said housing, and means for releasably compressing together each of said first and second arrays of discs for braking, the improvement comprising: means providing for all said means for attaching discs to be means for slidably attaching, said axle comprising a first stub axle and a second stub axle, each of said first and second stub axles having an inboard end and an outboard end, said housing containing said first array of discs about said first stub axle and containing said second array of discs in axially spaced relation thereto about said second stub axle, means for mounting a respective wheel on each outboard end of the stub axles, said means for releasably compressing including said system having a transverse centerline, and a two-lobe cam symmetrically disposed on said transverse centerline, means rotatably mounting said two-lobe cam and means for rotating said two-lobe cam and exerting equal force in opposite directions simultaneously along said housing, said means providing for all said means for attaching to be means for slidably attaching including said first plurality of discs having splined bores and said first and second stub axles having respective splined portions proportioned for slidably engaging said splined bores, said means providing for all said means for attaching to be means for slidably attaching further including said second plurality of discs having splined peripheries and said housing having a splined bore portion proportioned for slidably engaging said splined peripheries, said means for releasably compressing including a respective first bearing assembly in each of said opposite directions along said housing,

and means for affixing each said first bearing assembly to said housing, and said means for affixing including a respective snap-ring in a groove on each side of each said first bearing assembly.

4,498,561

RETRACTABLE WHEEL CHOCK FOR RAILWAY WAGONS

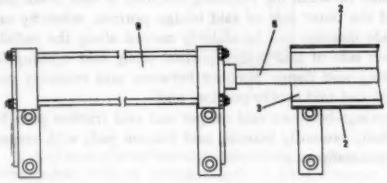
Maurice R. Sanders, Bristol, England, assignor to Godwin Warren Engineering Limited, Bristol, England

Filed Jun. 14, 1982, Ser. No. 387,733

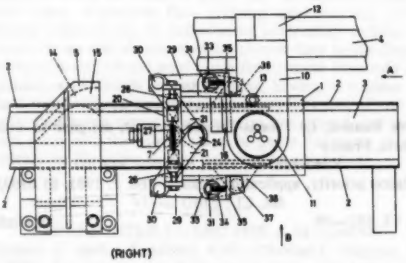
Claims priority, application United Kingdom, Jun. 24, 1981, 8119624

Int. Cl.³ B61H *13/00*

U.S. Cl. 188—36 **4 Claims**



(LEFT)



(RIGHT)

1. A wheel chock assembly for a railway wagon, comprising:

guide rail means mountable fast alongside a railway track;

carriage means mounted for longitudinal reciprocal movement on said guide rail means;

ram means associated with said carriage means for moving said carriage means longitudinally of said guide rail means to and from a rest position;

a cantilever arm having a wheel chock thereon, said cantilever arm being pivotally mounted on said carriage means and being pivotable between an operative position in which said wheel chock overlies said railway track in alignment with a wheel of a wagon on said track, and an inoperative position in which said cantilever arm is parallel to the track and said wheel chock is laterally displaced from said track;

two-way cam means associated with said guide rail means and said cantilever arm for camming said cantilever arm to its inoperative position on movement of said carriage means to its rest position and for caming said cantilever arm to its operative position on movement of said carriage means from its rest position;

friction brake means mounted on said carriage means, including a pair of brake shoes engageable with opposite sides of said guide track; and

brake actuating means associated with said cantilever arm for applying said friction brake means in response to a reaction force of a wagon wheel against said wheel chock when said ram means moves said carriage means to bring said cantilever arm into engagement with said wagon wheel.

4,498,562

DISC BRAKE ARRANGEMENT FOR RAIL VEHICLES

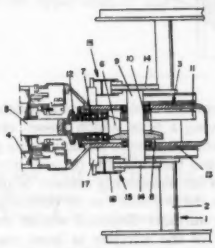
Ernst Piepenbreier, Essen, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 324,066

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3047412

Int. Cl.³ B61C *9/50*; B61F *3/04*; B61H *1/00*

U.S. Cl. 188—58 **1 Claim**



1. A brake and drive arrangement for a rail vehicle comprising:

at least one track wheel set (1) having a track wheel shaft (2);

a multi-stage reduction gear unit (3) connected to said wheel shaft having a unit housing (13) and at least one intermediate power transmission shaft (9) rotatably mounted therein and extending therefrom said multi-stage reduction gear unit comprises a two-stage miter gearing unit, a bevel gear (8) connected to and carried by said intermediate shaft, a spur pinion (1) connected to said intermediate shaft, a spur gear (11) connected to said track wheel shaft and engaged with said spur pinion to form a slow spur gear stage, a drive shaft (7) having a pinion (6) engaged with said bevel gear and forming a fast bevel gear stage, and a bearing connected between said drive shaft and said housing for rotatably supporting said drive shaft;

at least one brake disc (14) connected to said intermediate shaft outside said housing;

an electric motor (4) having an armature spindle (5) extending in a direction of travel of the rail vehicle and having opposite ends;

an elastic coupling (12) connected between one of said armature spindle ends and said shaft for centering and rotatably supporting said armature shaft and for transmitting torque from said motor to said drive shaft;

an additional multi-stage reduction gear unit connected to an opposite end of said armature spindle, said additional multi-stage reduction gear unit having an additional intermediate power transmission shaft, and an additional unit housing;

an additional brake disc connected to said additional intermediate shaft; and

caliper means engageable with each disc to stop rotation of each disc concurrently, and connected directly to each unit housing respectively;

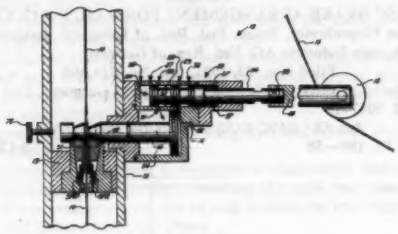
said first mentioned and additional multi-stage reduction gear unit being formed as mirror images of each other on opposite sides of said electric motor, said electric motor having a motor housing rigidly connected to said first mentioned and additional multi-stage reduction gear unit housings.

4,498,563

WIRELINE CATCHER

Wilson J. Trahan, Rte. 2, Box 54-A, Scott, La. 70583

Filed Aug. 23, 1982, Ser. No. 410,517
Int. Cl.³ B60T 7/12
U.S. Cl. 188—65.1 6 Claims



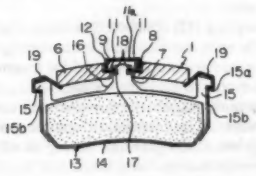
1. An oil well wireline cable catcher apparatus comprising:
a. a housing having a bore which passes vertically therethrough so that a wireline to be caught can pass vertically therethrough and then into the oil well bore;
b. sensing means for monitoring tension of the wireline, so that a break in the wireline can be detected;
c. a pair of slip surfaces disposed within the housing on opposite sides of the wireline at least one of which is movable between gripping and retracted positions, the pair of respective surfaces facing one another so as to grip the wireline in the gripping position;
d. spring means mounted in the housing for biasing at least one of the slip surfaces toward the retracted position in which the wireline is not engaged by the slip surfaces; and
e. slip actuator means carried by the housing and cooperatively connected to the sensing means for moving at least one of the slip surfaces relative to the other slip surface responsive to a break in the wireline, including a powered shaft carrying at one end portion thereof means for urging the two slip surfaces together.

4,498,564

DISC BRAKE SUBASSEMBLY HAVING FRICTION PAD RETAINING MEANS

Koichi Tamura, Tokyo, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Sep. 14, 1982, Ser. No. 418,175
Claims priority, application Japan, Sep. 18, 1981, 56-138503
Int. Cl.³ F16D 55/224, 65/02
U.S. Cl. 188—73.32 4 Claims



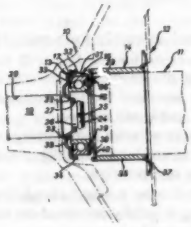
1. A disc brake subassembly comprising:
a caliper adapted to be slidably mounted on a stationary carrier integrally formed on the body of a vehicle, said caliper consisting of spaced opposing leg portions and a bridge portion connecting said leg portions and being for straddling the outer circumference of a rotatable disc;
a pair of friction pads for acting on opposite surfaces of the disc and being adapted to be slidably mounted on the carrier;
said bridge portion of said caliper having an opening extending therethrough in the direction of the radius of the disc, said opening being elongated in the direction of the axis of the disc;
a projection on each of said friction pads and projecting radially outwardly with respect to the disc and radially outwardly of the edge of said opening on the radially outer side of said bridge portion and having on the distal end thereof a retaining portion, said projection being received in said opening;
an elongated guide member having a generally C-shaped cross-section on the radially outer side of said opening and having flange portions directed inwardly of said C-shaped guide member with opposing spaced edges, the flanges being normally spaced from the remainder of the cross-section of said C-shaped guide member for being positioned between the retaining portions of said brake pads and the outer side of said bridge portion, whereby said guide member can be slidably moved along the radially outer side of said bridge portion along said opening for sliding said flange portions between said retaining portions and said bridge portion; and
pad springs between said caliper and said friction pads for radially inwardly biassing said friction pads with respect to said caliper.

4,498,565

CLUTCH RELEASE BEARING

Pierre Renaud, Le Plessis-Trevise, France, assignor to Valeo, Paris, France

Filed Jan. 19, 1982, Ser. No. 340,707
Claims priority, application France, Feb. 2, 1981, 81 01933
Int. Cl.³ F16D 23/14
U.S. Cl. 192—98 15 Claims



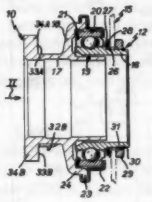
1. A clutch release bearing assembly, comprising an operating element adapted to be acted upon by a control member such as a disengagement fork, an actuator comprising an axial extension, one end of said actuator under the effect of said operating element being adapted to act on the disengagement mechanism of a clutch, and a bearing element located axially between the operating element and a portion of the actuator axially remote from said one end, which bearing element is movable transversely in all directions relative to the operating element, the bearing element also being movable transversely in every direction relative to the actuator, wherein said operating element engages with a support member mounted for axial movement, said operating member being acted upon by the associated control member, and wherein swivel means are provided between said operating element and said support member.

4,498,566

PULL TYPE CLUTCH RELEASING BEARINGS AND METHOD OF ATTACHING CLUTCH RELEASE BEARING TO CLUTCH FORK

Pierre Renaud, Le Plessis-Trevise, France, assignor to Valeo, Paris, France

Filed May 11, 1982, Ser. No. 377,069
Claims priority, application France, May 15, 1981, 81 09710
Int. Cl.[3] F16D *23/14*
U.S. Cl. 192—98 16 Claims



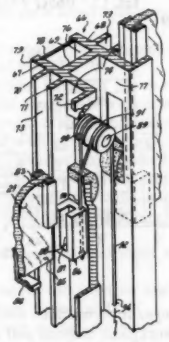
1. A clutch release bearing comprising an operating member cooperable with an actuator fork, a drive element rotatably mounted with respect to said operating member, said drive element adapted to coact with release means of a clutch for effecting clutch disengagement, said operating member comprising a sleeve having axial guide flats diametrically opposite each other, transverse flats defining axial bearing surfaces formed respectively on radial arms protruding radially outwardly from said sleeve, said transverse flats being disposed axially to a side of said axial guide flats remote from said drive element, said clutch release bearing having a median axial plane perpendicular to said axial guiding flats, one of said axial guide flats being disposed entirely on one side of said median axial plane and the other said axial guide flat being disposed entirely on the other side of said median axial plane.

4,498,567

PERIMETER GUARD FOR A MACHINE

Thomas R. Aultz, Loveland, Ohio; Charles C. Hughes, Villa Hills, Ky., and Stanley F. Humbert, Cincinnati, Ohio, assignors to R. A. Jones & Co., Inc., Covington, Ky.

Filed Sep. 30, 1982, Ser. No. 431,562
Int. Cl.[3] F16P *1/00*
U.S. Cl. 192—133 7 Claims



1. In a machine having a drive train operated by a main power supply, a perimeter guard comprising,

at least three vertical posts spaced horizontally around at least a major portion of the machine, said posts having free upper ends,

each post having three projecting flanges forming with an adjacent post two sets of vertical facing channels on each side thereof,

a single transparent window slidably mounted in each one set of the facing channels of adjacent posts,

counterbalance means normally holding each window in an upper position, said window adapted to be lowered by pushing downwardly on it to expose operating mechanisms on the machine for attendance by an operator,

panels each slidably mounted in the other set of facing channels of adjacent posts independently of said windows, said panels normally being disposed in a lower portion of said posts and being raisable to expose the drive train of the machine for maintenance work,

and means for locking said panels in a raised position,

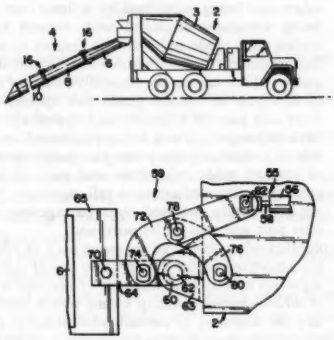
said windows and panels being removable by raising them past the free upper ends of said posts.

4,498,568

SWINGING CHUTE LINKAGE ASSEMBLIES

Ronald E. Christenson, Dodge Center, Minn., assignor to McNeilus Truck & Manufacturing Co., Inc., Dodge Center, Minn.

Division of Ser. No. 346,011, Mar. 29, 1982, Pat. No. 4,458,800.
This application Jan. 31, 1984, Ser. No. 575,659
Int. Cl.[3] B65G *11/00*
U.S. Cl. 193—10 3 Claims



1. A swinging chute assembly for a concrete mix truck or the like, comprising:

a chute section;

said chute section being of generally semi-circular cross-section for channeling flow of concrete mix;

hinge means interconnecting said chute section and the truck for pivotal movement about a generally upright swinging hinge axis over a lateral arc extending between left and right lateral positions;

a first arcuate link having two ends, one end being pivoted to said chute section at a point in predetermined spaced relationship with the upright swinging hinge axis;

a double-acting cylinder coupled with the other end of said first link and the truck; and

a second arcuate link having two ends, one end having pivoted to the truck and the other end of said second link being pivoted to said first link at a point between the ends thereof.

4,498,569
COMMODITY RACK FOR AUTOMATIC VENDING MACHINES

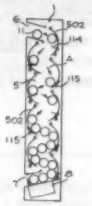
Nobuyasu Tanaka, Yokkaichi; Mitunari Ohashi, Kuwana, and Shohzoh Iwamoto, Yokkaichi, all of Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,196

Claims priority, application Japan, Jul. 14, 1981, 56-109609; Aug. 25, 1981, 56-125323[U]

Int. Cl.³ G07F *11/34*

U.S. Cl. 193—27 **2 Claims**



1. For use in automatic vending machines, a commodity rack including:

first and second side walls;

front and rear walls joined to said first and second side walls to form the outer shell of said commodity rack;

said front wall having an inlet port in the upper portion thereof and an outlet port in the lower portion thereof;

a pair of vertical guide rails each comprising a series of concave rail segments, each rail segment having a pair of edges and being supported by at least one side wall and being vertically displaced with respect to each other within each guide rail and with respect to corresponding but oppositely directed concave rail segments in the other guide rail but having the respective pairs of edges on each of said pair of vertical guide rails spaced, horizontally, from said pairs of edges on said oppositely directed concave rail segments and being positioned on the opposite side of a vertical plane passing centrally through said pair of vertical guide rails, from said pairs of edges on said oppositely directed concave rail segments, thereby defining a vertically disposed, open passageway coupling said inlet port and said outlet port; and,

a plurality of auxiliary rail segments each of which is pivotably supported below a respective one of said concave rail segments by way of at least one of said side walls and each of which contains biasing means which cause each auxiliary rail segment, in the unloaded state, to protrude into said passageway with an upwardly inclined attitude;

each of said auxiliary rail segments being pivotably supported along its upper edge from at least one of said first and second side walls and being pivotable to a downwardly inclined attitude in response to a weight being applied thereto.

4,498,570
MULTIPLE PURCHASE DISCOUNT MODULE FOR A SINGLE PRICE VENDING MACHINE

Eddie W. King, and Annis R. Morgan, Jr., both of Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jan. 29, 1982, Ser. No. 343,905

Int. Cl.³ G07F *9/08*

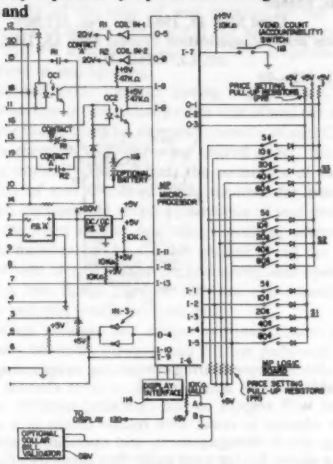
U.S. Cl. 194—1 N **17 Claims**

14. A vending machine for vending goods in discrete sales units, each unit comprising one or more articles, comprising:

a first manually adjustable digital price setting switching device for generating a digital price code for setting a first sales price for a first unit vended in a single sales transaction;

a second manually adjustable digital price setting switching device for generating a digital price code for setting a second price for a second unit when two units are vended in a single sales transaction;

first means for receiving and determining the amount of currency deposited by a purchaser during a sales transaction; and



second means for determining if said amount deposited equals or exceeds said first price and for permitting a purchaser to select one unit when said amount deposited equals or exceeds said first price, and for determining if said amount deposited equals or exceeds the sume of said first and second prices and for permitting a purchaser to select two units when said amount deposited exceeds said sum.

4,498,571
PALLET CHANGER

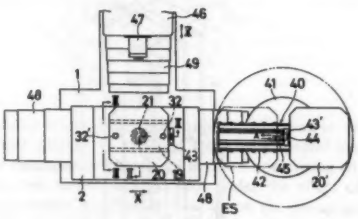
Kenji Nomura, Aichi; Tetsuro Yamakage, Anjo, and Katsuyoshi Noro, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 9, 1962, Ser. No. 386,671

Claims priority, application Japan, Aug. 19, 1981, 56-121771[U]

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—339 **4 Claims**



1. A pallet changer for a machine tool having a work pallet for setting up a workpiece thereon and a rotary table capable of removably supporting said work pallet thereon, comprising:

loading and unloading means for loading said work pallet onto, and unloading the same from said rotary table;

a pallet clamper having a rectangular shape and adapted to guide said work pallet in a longitudinal direction thereof when the same is horizontally transferred by said loading and unloading means onto and from said rotary table, said

pallet clamper being vertically movable for clamping said work pallet on, and unclamping the same from said rotary table;

main support and operating means rotatably carrying said rotary table thereabout and including a first hydraulic cylinder device connected with the center portion of said pallet clamper for vertically supporting and moving said pallet clamper so as to clamp said work pallet on, and unclamp the same from said rotary table; and

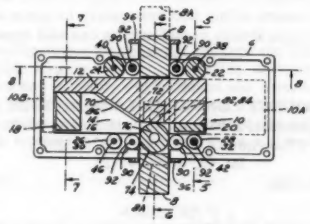
auxiliary support and operating means disposed between said rotary table and said pallet clampler and including a second hydraulic cylinder device vertically operable synchronously with the operation of said first hydraulic cylinder device for auxiliarily supporting at least one longitudinal opposite end portion of said pallet clamper while said work pallet is unclamped from said rotary table.

4,498,572

WORKPIECE CLAMPING MECHANISM FOR MULTIPLE STATION TRANSFER MACHINES

John H. Brems, Apt. 16-D, 2800 S. Ocean Blvd., Boca Raton, Fla. 33432

Filed Dec. 4, 1981, Ser. No. 327,517
Int. Cl.³ B65G 47/00
U.S. Cl. 198—345 **1 Claim**



1. In a multiple station transfer machine in which workpieces are progressively transferred from station to station in said machine and in which said workpieces are individually clamped in each station by movable clamping means, a unified mechanism for clamping said workpieces in the individual stations which comprises:

A. one or more individual self-contained linear clamp modules mountable in various positions of orientation at each station and in which each linear clamp module comprises:

1. a housing,

2. an input member mounted for substantially linear movement in each said housing,

3. an output member mounted for substantially linear movement in said housing in a direction transverse to the linear movement of said input member to be operatively associated with said clamping means in said station, said output members being oriented to move in a plane normal to the linear movement of said input member but at selected angles in said plane,

4. cam means mounted for substantially linear movement in said housing,

5. elastic means connecting said input member and said cam means,

6. cam follower means mounted on said output member engaging said cam means, and

B. reciprocating drive means mounted on said machine operatively connected to drive multiple said input members of said multiple linear clamp modules simultaneously in the same direction, whereby each said input member is driven through a substantially constant stroke and progressively drives said elastic means, said cam means, said cam follower means, said output member, and said clamping means, until said clamping means movement is stalled by clamping contact with said workpiece thereby arresting the movement of said cam means and causing any differential movement of said cam means and said input member to be absorbed by said elastic means,

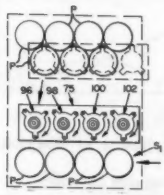
C. said output member having a transverse opening and said cam means comprising a load cam member projecting through said opening with a cam surface in contact with a load cam follower roller in said opening, and a return cam mounted on and parallel to said load member comprising parallel spaced cam plates slideable along each side of said output member and cooperating with return cam follower rollers on each side of said output member on surfaces outside said opening.

4,498,573

PAIL PALLETIZER WITH ROTATABLE CLAMPS

Larry A. Anderson and Charles H. Shultz, both of Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.

Filed Apr. 11, 1980, Ser. No. 139,234
Int. Cl.³ B65G 47/24
U.S. Cl. 198—374 **10 Claims**



1. Apparatus for transferring an article from a first station to a second station comprising:

carriage means operable for selective shifting along a path between said first and second stations;

gripping means mounted on said carriage means operable for selectively gripping and releasing the article;

orienting means operably connected to said gripping means for selectively imparting rotation thereto, said orienting means including a rotatable sleeve rotatably mounted on said carriage means;

said gripping means including holder means rigidly mounted on said rotatable sleeve for supporting a plurality of pivotally mounted clamping arms, said gripping means further including first actuating means connected to an extendible-retractable rod slidably received in said rotatable sleeve, one end of said rod being connected to said clamping arms so that when said rod is extended or retracted, said clamping arms are pivoted;

second actuating means mounted on said carriage means operable for selectively imparting rotation to said rotatable sleeve; and

mounting means interposed between said first actuating means and said rotatable sleeve, said first actuating means being secured to said mounting means with said mounting means being connected to said carriage means and restrained from rotation relative thereto, said mounting means being provided with retainer means permitting limited rectilinear shifting of said mounting means relative to said rotatable sleeve, said mounting means being provided with a bore for receiving said rod therethrough, said mounting means further including a slot radially extending from the bore, said rod further including pin means radially extending therefrom for slidable reception in the slot so that upon rotation of said rotatable sleeve relative to said mounting means, said rod remains isolated from rotation.

4,498,574

APPARATUS FOR ALIGNING TUBULAR TRANSPORT CONTAINERS HAVING A SUBSTANTIALLY U-SHAPED HOLLOW CROSS-SECTION FOR DIL HOUSING PRIOR TO THE EMPTYING OF SUCH TRANSPORT CONTAINERS

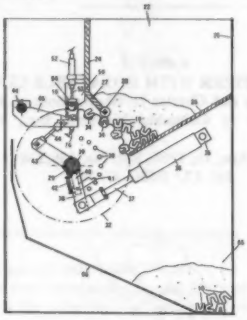
Georg Fischer, Inkofen, Fed. Rep. of Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1982, Ser. No. 404,789

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131317

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—380 **8 Claims**



1. Apparatus for aligning an elongated tubular container comprising:

means for delivering said container;

means for receiving said container from said delivering means and transporting said container to first and second locations;

means adjacent said receiving and transporting means at said first location for engaging at least the ends of said container, and for temporarily lifting said container free from said receiving and transporting means, and thereafter returning said container to said receiving and transporting means, said engaging and lifting means having a semi-circular cutout in an upper edge thereof within which said container is received;

means at said first location for directing gas upward against said container for aligning said container to a desired alignment while said container is temporarily lifted from said receiving and transporting means;

means for clamping said aligned container within said semi-circular cutout against said upper edge of said engaging and lifting means;

means for moving particles along a longitudinal center line of said tubular container while said container is clamped at said first position before said container is returned to said receiving and transporting means; and

means at said second location for receiving said container from said receiving and transporting means after said container has been returned to said receiving and transporting means to store said container therein.

4,498,575

METHOD AND APPARATUS FOR CONVEYING ARTICLES

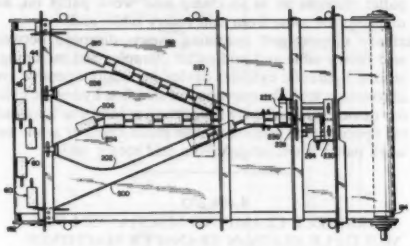
Horst F. W. Arfert, Midlothian, and Reynaldo P. Leyco, Chesterfield County, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 419,573, Sep. 17, 1982, Pat. No. 4,473,027. This application Mar. 12, 1984, Ser. No. 588,199

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—400 **2 Claims**

1. Apparatus for conveying and reorienting articles having a major axis and a minor axis and which are oriented and conveyed in a direction parallel to their minor axis and positioned in a plurality of rows comprising a conveying surface, baffle means positioned above said conveying surface, said baffle means being constructed and arranged to contact the sides of successive articles in said rows to guide said articles along said conveying surface, reorient said articles along their major axis



and combine said articles from adjacent ones of said plurality of rows into a plurality of columns, a first control means to selectively permit a plurality of said articles from said columns to advance to a passageway to thereby combine the articles from said plurality of columns into a single stream, and a second control means within said passageway to space said articles in said single stream as said articles exit said apparatus.

4,498,576

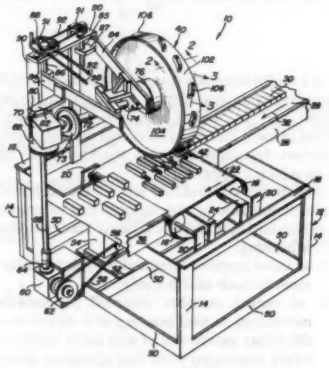
PRODUCT CONVEYOR LANE DIVIDER

Vernon J. Anderson, 3404 Iowa St., Alexandria, Minn. 56308

Filed Apr. 22, 1982, Ser. No. 371,002

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—426 **12 Claims**



1. Product separator and lane divider apparatus comprising a conveyor means coupled to a drive means, the conveyor means receiving a single infeed lane of products from a product infeed conveyor onto a conveyor surface of the conveyor means, rotatable wheel means positioned above the conveyor surface, the wheel means having a cylindrical surface mounting thereon at least one abutment means for cyclically engaging with predetermined ones or groups of the lane of products on the conveyor surface for pushing said ones or groups across the conveyor surface from the single lane on the conveyor surface to an adjacent laterally displaced lane thereon distinct from said single lane, and lane separator projections mounted on the conveyor means in a lengthwise array projecting from the conveyor surface between the infeed lane and the adjacent lane for engaging alternate products in the single lane between said predetermined ones or groups of products to prevent the

alternate products being transferred by said wheel means to the adjacent lane.

4,498,577

SCRAPING DEVICES FOR CONVEYOR BELT AND PULLEY DRUM

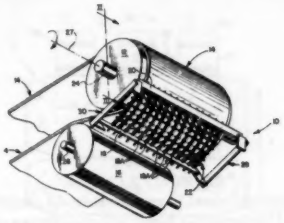
Willem D. Veenhof, 705 Main St., Destin, Fla. 32541

Continuation-in-part of Ser. No. 184,044, Sep. 4, 1980, Pat. No. 4,349,098. This application Aug. 21, 1981, Ser. No. 294,924

Claims priority, application South Africa, Sep. 7, 1979, 79/4738; Canada, Sep. 5, 1980, 359680; United Kingdom, Sep. 5, 1980, 8028685

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—499 **16 Claims**



6. A cleaning device for conveyor belts and the like comprising a flexible tension member, a plurality of wear resistant scraper elements movably supported on said tension member, and means movably coupled between said tension member and said scraper elements for yieldably maintaining said scraper elements at separate scraper positions along said tension member.

4,498,578

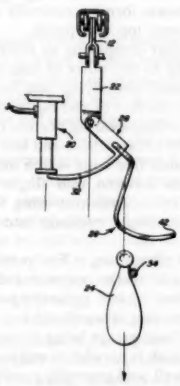
EASY-DROP SIZING CARRIER FOR POULTRY

Paul J. Altenpohl, High Point, N.C., assignor to W. F. Altenpohl, Inc., High Point, N.C.

Filed Feb. 5, 1982, Ser. No. 346,216

Int. Cl.³ B65G *17/32*

U.S. Cl. 198—680 **2 Claims**



1. In combination with a conveyor, a plurality of load carriers operatively connected to the conveyor for travel along a conveyor path, hook means for suspending loads from the carriers, and load release means mounted in laterally spaced relation to the conveyor path, the improvement residing in hook mounting means pivotally connecting each of the hook means to the carriers for supporting the loads in a free suspension position during travel, actuating means engageable by the load release means for lateral displacement of the hook means relative to the conveyor path from said free suspension position to a releasing position, and stop means spaced from the loads and engageable therewith in response to said lateral displacement of the hook means for limiting lateral movement of the loads during approach of the hook means to the releasing position and release of the loads therefrom, each of said hook means comprising a closed-loop rod element having a lower end portion diverging in an upwardly inclined direction in the free suspension position, said actuating means comprising an actuating member rigidly connected to the hook mounting means and extending laterally therefrom relative to the conveyor path, said actuating means maintaining the hook means in the releasing position when unloaded and in the free suspension position laterally spaced from the stop means prior to said engagement by the load release means when loaded.

4,498,579

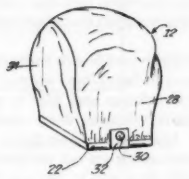
COMBINATION TOWEL AND RAIN COVER FOR A GOLF BAG

Jack Brick, 10800 N. Military Trail, Palm Beach Gardens, Fla. 33410

Filed Jun. 25, 1984, Ser. No. 624,721

Int. Cl.³ A63B *55/00, 57/00*

U.S. Cl. 206—315.4 **13 Claims**



1. A golf bag cover for being attached to a golf bag comprising:

a reversible hood having inner and outer surfaces, said inner surface being a towel material and said outer surface being a water repellant material;

means for attaching said hood to the shoulder strap area of said golf bag; and

means for fastening said hood over said golf bag with said outer surface being exposed;

said hood being inverted when not fastened over said golf bag so that the exposed inner surface serves as a towel hanging from said shoulder strap area.

4,498,580

LAMP BULB CARTON, AND RESULTING LAMP BULB PACKAGE

Edward J. Getz, Irvington, N.J., and Gerald T. Lombardi, Florida, N.Y., assignors to North American Philips Electric Corp., New York, N.Y.

Filed Jan. 13, 1983, Ser. No. 457,789

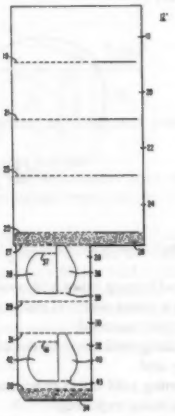
Int. Cl.³ B65D *85/42, 81/02*

U.S. Cl. 206—418 **7 Claims**

1. A carton for packaging an electric lamp bulb, which comprises four interconnected walls of paperboard defining a collapsible open-ended tubular sleeve; and internal liner means for protectively retaining a lamp bulb inserted into said sleeve and concurrently maintaining the sleeve in erect tubular form, said liner means including a pair of liner-panels hingedly connected to one set of oppositely disposed walls of the sleeve, said liner-panels being disposed in side-by-side spaced-apart relationship with each other and with the other set of oppositely disposed walls of said sleeve when the sleeve is in erect tubular form and thereby providing a dual-partition-like liner extending longitudinally within the sleeve and across the inte-

rior thereof; each liner-panel having a pair of flaps hinged to opposite longitudinally extending side portions of the associated liner-panel and swingable in criss-cross fashion along arcuate paths from the plane of the associated liner-panel toward the respective adjacent wall of the sleeve; both pairs of flaps being so shaped and arranged that, when displaced from the respective planes of the liner-panels, they provide cradle-like structures and a single opening in each liner-panel adapted to nestingly receive and effect a frictional interlock with the bulbous portion of the lamp bulb inserted into the sleeve and between the liner-panels; said flaps also being of such length that, when in displaced cradle-like position within the erected sleeve, the free end portions of the flaps are in pressured engagement with the respective adjacent walls of the sleeve along locations proximate different corners of the sleeve and exert buttressing forces on the sleeve walls at such locations to counteract the inherent tendency of the sleeve to collapse; one of the flaps in each pair of flaps being longer than the other flap in the pair, said longer flaps being so oriented that they extend into and engage corner portions of the erected sleeve diagonally opposite one another and thus also serve to lock the sleeve in erect tubular form.

6. An electric lamp bulb package, which comprises an electric lamp bulb having a bulbous-shaped portion; and a collapsible paperboard carton of open-ended tubular configuration



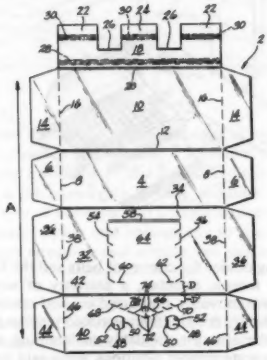
snugly enclosing said lamp bulb and having an internal lining means in interlocked relationship with the bulbous-shaped portion of the lamp bulb for retaining the lamp bulb within the carton, said carton having four interconnected walls defining a rectangular cross section when fully erected; said liner means being constituted by a pair of liner-panels extending across the carton interior and joined to one set of oppositely disposed walls of the carton and spaced inwardly from the other set of oppositely disposed walls of the carton; each liner-panel having a pair of flaps hinged to opposite side portions of the associated liner-panel and swingable in opposite directions from the plane of said associated liner-panel in criss-cross fashion toward the adjacent carton wall, the pairs of flaps being so arranged and shaped that they form a single opening in each liner-panel and a pair of cradle-like structures when the flaps are displaced outwardly from the planes of the liner-panels; the bulbous-shaped portion of the lamp bulb being disposed between said pair of liner-panels and displacing both pairs of flaps outwardly toward the adjacent walls of the carton and thus protruding into the openings formed in the liner-panels by the displaced flaps so that the packaged lamp bulb is in nested interlocked relationship with the liner-panels; the displaced criss-crossed flaps being of such length that they are in pressured engagement with the respective adjacent walls of the carton and exert buttressing forces thereon to counteract the inherent tendency of the carton to collapse; one of the flaps in each pair of flaps being longer than the other flap in the pair, said longer flaps in their displaced position being so oriented that they engage corner portions of the carton diagonally opposite one another and thereby serve to maintain the carton in fully erected form.

4,498,581

BEVERAGE CAN CARTON WITH OPENING PANEL

Daniel P. Dutcher, Blaine, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 11, 1983, Ser. No. 540,377
Int. Cl.³ B65D *5/46, 75/68*
U.S. Cl. 206—427 **2 Claims**



1. A paperboard carton for holding a plurality of beverage cans, said carton comprising:

(a) side, bottom and top walls foldably connected together to form a tubular container;

(b) end flaps foldably connected to end edges of said walls and overlapped and secured to each other to form end closures for said container;

(c) said top wall comprising an outer top wall panel foldably connected to one of said side walls, said outer top wall panel including means forming centrally disposed finger openings in said outer top wall panel;

(d) said top wall further comprising an inner top wall panel foldably connected to the other of said side walls, said inner top wall panel underlying and being adhesively secured to an inner surface of said outer top wall panel to provide a medial weight-bearing portion of said top wall which is two-ply in construction, and said inner top wall panel having an inner free edge which includes a medial tab which extends between said finger openings and which is flanked by recesses providing for insertion of fingers through said finger openings into the interior of said container;

(e) an opening panel comprising a first portion disposed in said one of said side walls, opposite ends of said first portion being defined by two generally parallel arrays of cut score lines extending toward said top wall with bottom extremities of said arrays being interconnected by a hinged fold line which is parallel to and spaced upwardly from said bottom wall, said generally parallel arrays of cut score lines merging into respective series of converging cut score lines, with the uppermost one of each series of merging cut score lines being spaced apart from 5/16 inch to ¼ inch from the fold interconnecting said first side wall and said outer top wall panel, said opening panel further comprising a second portion disposed in said outer top wall panel, said second portion being defined by diverging cut score lines which diverge from a common apex toward said end closures of said container, the outermost

ones of said diverging cut score lines being disposed substantially colinearly with said generally parallel arrays of cut score lines and being spaced apart from ¼ inch to 1¼ inches from said fold interconnecting said one side wall and said outer top wall panel, there being flanking shearing marginal portions of said opening panel extending between said converging and diverging cut score lines; and

(f) the grain of the paperboard in said outer top wall panel and said one side wall being generally parallel to said end closures to facilitate linear shearing of said shearing marginal portions of said opening panel when the latter is pulled away from the remainder of the container to open the carton.

4,498,582

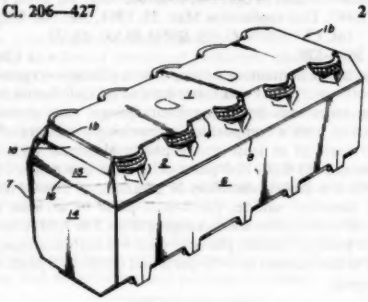
ARTICLE CARRIER

Roberto Tomassi, Chateauroux, and Claude Martin, Deols, both of France, assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 403,111, Jul. 29, 1982,. This application Mar. 23, 1984, Ser. No. 592,745

Int. Cl.³ B65D *5/02*

U.S. Cl. 206—427 **2 Claims**



1. A wraparound type article carrier having a plurality of articles disposed in a side by side rectilinear arrangement and secured therein by article retaining apertures formed in said carrier for receiving parts only of the heels and tops of the packaged articles and comprising a pair of side walls, a unitary top wall overlying the tops of the packaged articles, and a bottom wall interconnected to form a sleeve, and a pair of unitary end panels foldably joined respectively to the ends of said top wall, a separate tubular closure element telescoped over at least one article disposed at one end of the carrier and secured in place by said article, said closure element comprising a main panel of a size and configuration to substantially close an end of the carrier, an auxiliary panel foldably joined directly to the upper edge of said main panel, a pair of side panels joined respectively to the end edges of said main panel, and a back panel joined to the edges of said side panels remote from said main panel to form said tubular closure element, said auxiliary panel extending inwardly of said carrier at an angle greater than 90° to the inner surface of said main panel, and one of said end panels being disposed in overlapping face contacting relationship with said auxiliary panel to form a substantially complete closure for the acjacent end of the carrier, said closure element being retained within said sleeve by the article disposed at said one end and the end article being retained in said carrier by said article retaining apertures formed in the carrier.

4,498,583

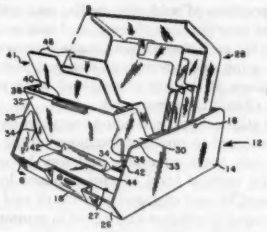
DISKETTE STORAGE CONTAINER FOR STORING A LARGE QUANTITY OF DISKETTES

Jerry M. Long, Pleasanton, and James A. Womack, Los Gatos, both of Calif., assignors to Innovative Concepts, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 502,188, Jun. 8, 1983,. This application Sep. 1, 1983, Ser. No. 528,398

Int. Cl.³ B65D *85/30*

U.S. Cl. 206—444 **23 Claims**



1. An improved storage container comprising:

a generally rectangular base member having a means forming a bottom surface and four upturned walls forming an open top, and camming means disposed adjacent to two of said walls;

a closure member attached to said base member by first pivot means having a portion configured to provide a closure for the open top of said base member with two downwardly turned side walls pivotally attached to corresponding walls of said base member; and

a diskette support member having means forming a diskette support surface and a pair of side walls pivotally attached to the said side walls of said closure member by second pivot means and forming camming surfaces for engaging said camming means, said camming surfaces having a notch formed therein for receiving said camming means when said closure member has been rotated through a predetermined arc about said first pivot means thereby allowing said support member to rotate about said second pivot means away from said closure member.

4,498,584

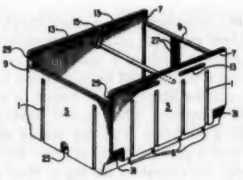
STACKABLE CONTAINER FOR USE IN A CONTAINERIZATION SYSTEM

Arthur D. Newbury, St. John's, Canada, assignor to Contrawl Limited, St. John's, Canada

Filed Jul. 26, 1982, Ser. No. 402,111

Int. Cl.³ B65D *21/02, 90/02, 90/06*

U.S. Cl. 206—510 **6 Claims**



1. A stackable container, comprising:

(i) a rectangular bottom wall;

(ii) a pair of end walls extending upwardly from the opposed short sides of said bottom wall;

(iii) a pair of side walls extending upwardly from the opposed long sides of said bottom wall and having vertically

extending upper portions at a displacement above the tops of said end walls, the bottom portions of said side walls being inwardly recessed a sufficient amount that each of said containers at the bottom thereof presents a portion having a reduced width dimensioned to be received between the extending upper portions of the side walls of a similar container stacked vertically therebelow, said portion of reduced width being of a vertical dimension substantially equal to the vertical dimension of the extended upper portions of said side walls;

(iv) a laminar cover dimensioned to fit closely between said upper portions of said side walls, said end walls being provided near the tops thereof, and said cover being provided at the ends thereof with mating elements for removably securing said cover in an engaged position in a horizontal plane at the top of said end walls to enclose the interior of said container; and

(v) a rigid stiffener rod extending transversely between and rigidly secured to opposed locations on the interior faces of said side walls generally mid-way between said end walls, the vertical level of said opposed locations being determined by said engaged position of said cover so that in said engaged position said cover is supported below by the upper surface of said stiffener rod,

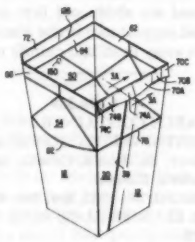
said side walls being provided with gripping sites in the vertically extending upper portions thereof adapted to be engaged by overhead mechanical gripping means operating between said upper portions of said side walls and above said cover in its engaged position, so that a container at the top of a stack may be removed without disturbing the contents of said container or similar containers stacked below or adjacent thereto.

4,498,585

DENESTING PAPERBOARD CONTAINER

Robert L. Gordon, Monroe; Andrew J. Alba, Warwick; Michael Bodary, Middletown, and Barbara Mesquida-Feirman, New York, all of N.Y., assignors to International Paper Company, New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 565,066
Int. Cl.³ B65D *21/00*
U.S. Cl. 206—518 **11 Claims**



1. A container fashioned from a single blank of resilient, stiff and foldable sheet material, such as paperboard, the container being in the general form of a truncated, tapered prism, the container having a bottom and having means for forming a top closure, the container adapted to be nested or stacked with like containers, the containers when nested having their top portions still open, a container from the nested stack being withdrawn, filled with a potable liquid or other foodstuff, and then closed at its top, the container having at least one top sealing, denesting flap extension, the flap extension being folded along its base fold line towards the outside of the container and being tacked at spaced portions therealong to an outside wall of the container, the natural resiliency of the sheet material forming the container causing the flap extension to bulge outwardly at its non-tacked portions, to thereby form a denesting lip or skirt, whereby similar containers may be stacked and one container of such a stack may be withdrawn without sticking.

4,498,586

PACKAGE SAVER

Carmela Vitale, 1076 Carll Straight Path, Dix Hills, N.Y. 11746

Filed Feb. 10, 1983, Ser. No. 465,642
Int. Cl.³ B65D *85/72*
U.S. Cl. 206—525 **4 Claims**

1. in combination a package having a flexible cover, a food article packaged therein and spaced downwardly from the cover, a unitary molded plastic package saving device for positioning between the cover and the article for supporting the package cover thereby preventing damage to the packaged food article by the cover, said device comprising the combination of three or more spaced legs, each leg having one relatively flat end adapted for engaging the packaged article and having its opposite end attached to a device cover portion.

4,498,587

APPARATUS FOR THE CONTROL OF LARVAE OF THE GYPSY MOTH AND OTHER HARDWOOD DEFOLIATORS

Bohdan O. Hreschak, and Christine Hreschak, both of 55 Cecelia Dr., Wayne, N.J. 07470

Continuation-in-part of Ser. No. 356,738, Mar. 10, 1982, Pat. No. 4,447,447. This application Mar. 23, 1984, Ser. No. 592,952
Int. Cl.³ A01N *43/08*; B65D *85/00, 85/72*
U.S. Cl. 206—525 **12 Claims**

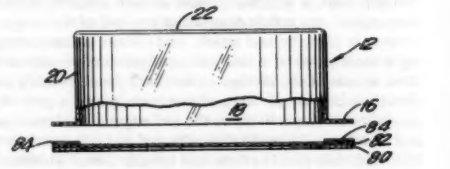
1. A cartridge containing a composition effective to prevent gypsy moth caterpillars and other hardwood defoliators from ascending trees and devouring their foliage, said cartridge being packed with a composition comprising a mixture of (a) 0.05–10.0 parts of at least one aliphatic aldehyde with 2–7 carbon atoms, (b) 0.05–10.0 parts of at least one sulfur compound which is dibutyl disulfide, or a mixture of dibutyl disulfide and dimethyl sulfide, (c) 0–10.0 parts of at least one diketofuran with carbon atoms ranging from 5 to 7, (d) 0.10–20 parts of at least one carboxylic acid with 4–6 carbon atoms, (e) a solvent in the amount of 0–50 parts and (f) 50–99.5 parts of a bulking agent.

4,498,588

RECLOSABLE PACKAGING SYSTEM AND METHOD FOR FORMING SAME

Raymond G. Scott, Oak Brook, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed May 3, 1984, Ser. No. 606,637
Int. Cl.³ B65D *85/62, 43/16*; B65B *31/00, 25/08*
U.S. Cl. 206—526 **23 Claims**



1. A sealable and reclosable package comprising:

a polygonal body member of semi-rigid preformed plastic having a first planar marginal portion and a central portion shaped to provide a packaging chamber defined by a closed side wall and a transversely extending top wall integral therewith;

a polygonal base member having a second planar marginal portion and a central raised panel shaped to project into

and provide a snug fitting closure for said packaging chamber, with said first and second planar marginal portions being in spaced relationship; and

means disposed between said first and second planar marginal portions for permanently attaching one side edge of said portions together, and for peelably attaching the remaining side edges of said planar marginal portions together.

4,498,589

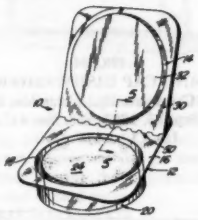
LOCKING HINGE FOR RECLOSABLE PACKAGE

Raymond G. Scott, Oak Brook, and Sherry M. McNulty, Chicago, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed May 4, 1984, Ser. No. 606,911

Int. Cl.³ B65D *43/24, 85/62, 25/08*

U.S. Cl. 206—526 **13 Claims**



1. In a reclosable package having:

a body member of semi-rigid preformed plastic with a first planar marginal portion and a central portion shaped to provide a packaging chamber, and

a base member having a corresponding second planar marginal portion and a central panel to provide a closure for said packaging chamber,

said body member and base member permanently bonded together along one pair of adjacent sides of said first and second planar marginal portions;

the improvement comprising a hinge situated within said pair of adjacent sides, and locking means for automatically locking said hinge when said package is open and unlocking said hinge when said package is closed.

4,498,590

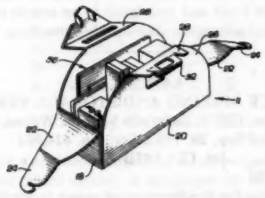
PACKAGING FOR HEALTH CARE PRODUCTS

Laura M. Burdick, 330 4th Ave. #B, Venice, Calif. 90291

Filed Mar. 25, 1983, Ser. No. 478,755

Int. Cl.³ A45C *11/00*; B65D *85/00*

U.S. Cl. 206—581 **15 Claims**



1. Improved packaging for a plurality of health care products which are designed to be removed from such packaging before being put to their intended use, including:

an outer container member having lower wall means for defining a foot portion and having upper wall means for defining a head portion, and which is manually convertible between an open position where said lower wall means remains intact while said upper wall means are partially displaced outwardly to allow easy removability of the health care products and a closed position to securely store the health care products when not in use;

an inner positioning member located in said foot portion, and having separator means for separately positioning each item of the health care products in said foot portion in a substantially upright position extending above said foot portion into said head portion to facilitate visual inspection of and manual access to each item of the health care products when said outer container member is in said open position; and

said upper wall means includes a pair of opposing side panels which constitute an upward extension of said lower wall means and which remain upstanding when said outer container is in the open position, and opposing end panel means movable from being non-convergent when said outer container member is in said open position to being upwardly convergent to be removably attachable together by flap means for forming a lid above said head portion when said outer container is in said closed position, with said opposing end means having a width less than the width of said opposing side panels, and with both opposing side panels and said opposing end means for enclosing said head portion when said outer container member is in said closed position and for limiting the upward movement of the health care products relative to said inner position member to prevent each item of the health care products from becoming accidentally dislodged from its storage position in said inner positioning member.

4,498,591

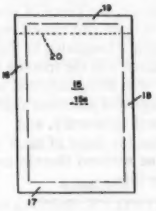
OPENABLE FLEXIBLE PACKET

George B. Smith, II, Portland, Me., assignor to Drug Concentrates, Inc., Annandale, N.J.

Division of Ser. No. 845,472, Oct. 26, 1977, Pat. No. 4,261,253, which is a continuation-in-part of Ser. No. 362,741, May 22, 1973, abandoned. This application Oct. 20, 1980, Ser. No. 198,544

Int. Cl.³ B65D *27/32*

U.S. Cl. 206—620 **6 Claims**



1. A thin, flexible, generally flat and rectangular pouch packet containing a finely-divided material therein, comprising a pair of generally flat substantially parallel opposed fluid-impervious rectangular walls having inside surfaces in generally face to face confrontation with the walls completely joined together around their peripheral top, bottom, and side edges and having a weakened tearing line substantially parallel with and in close proximity to be joined top edge of the packet defining a tear away marginal strip to facilitate the opening of the pouch packet to cup-like form, at least one of the walls having a thin elongated embossment providing a concave deformation relative to the inside surface of the wall, the concave deformation protruding outwardly from the generally flat inside surface of the wall to provide a channel between the inside surfaces of the opposing walls disposed in the generally face to face confrontation, the concave deformation starting at the tearing line at a position midway between joined inner side

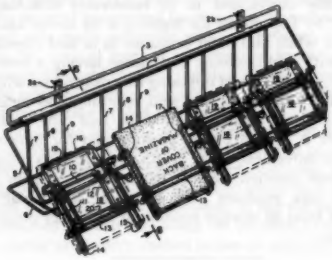
edges of the pouch packet and extending toward the bottom edge of the pouch packet and being dimensioned and arranged to facilitate folding of said wall outwardly to enable the packet to open into generally cup-like form upon the removal of the tear-away marginal strip and the application of pressure urging the side edges of the packet toward one another, whereby fluid may be added to the finely-divided material in said packet while in its generally cup-like form.

4,498,592

MAGAZINE DISPLAY RACK

James Colucci, Fountain Valley, Calif., assignor to Design Wire Products, Inc., Los Angeles, Calif.

Filed Jan. 26, 1984, Ser. No. 574,078
Int. Cl.³ A47F *5/01*
U.S. Cl. 211—42 **4 Claims**



1. A magazine display rack comprised of

a trough-like housing having a front wall, a bottom and a rear wall, said rear wall having brackets connected thereto for securing said housing to a display panel or wall,

a plurality of magazine cages for securing magazines on display standing upright in said housing against the front wall thereof, each of said cages being closed at the top and open at the bottom,

means for pivoting each cage on the upper edge of said front wall to gain access to the open end thereof for insertion or removal of a magazine, the pivot of each cage being at a position between its open and closed ends selected so that in its upright position, a magazine in the cage rests on said bottom of said housing, and the spacing between said front wall and said rear wall being selected so that a magazine held firmly in its cage will just clear the rear wall while its cage is being pivoted outwardly, and

an opaque sheet across the front of each cage to screen the cover of a magazine secured therein except that portion thereof bearing the title.

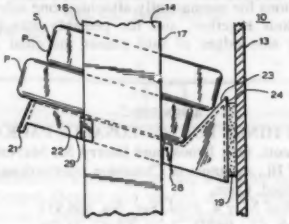
4,498,593

MODULAR SHELF STRUCTURE

William Silver, New York, N.Y., assignor to Thomson-Leeds Company Inc., New York, N.Y.

Filed Mar. 2, 1983, Ser. No. 471,230
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—49 D **7 Claims**

1. In combination with a rearwardly disposed vertical wall having a front face and a pair of laterally spaced vertically extending strips lying in planes perpendicular to said wall front face, a shelf module comprising a rear wall having a rear face, a base member projecting forwardly from said rear wall between said strips, a pair of forwardly-rearwardly spaced stop members located on each side of said base member and embracing a respective strip to restrict the forward-rearward movement of said module, said front and rear stop members of each pair thereof delineating a side opening permitting passage of a strip therethrough into the space between said stop members and a pad located on said module rear face and having a pressure sensitive adhesive on its rear face engaging said vertical wall front face to restrict the vertical movement of said module.

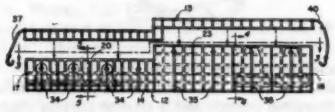


4,498,594

NIPPLE, RING AND CAP DISHWASHER ACCESSORY

Ivan R. Elder, 116 Greengate Dr., Columbia, S.C. 29204

Filed Sep. 13, 1982, Ser. No. 417,046
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—181 **8 Claims**



1. An accessory for use in a conventional automatic dishwashing machine for holding the nipples and the ring and cap components of infant feeding bottles, comprising, in combination:

a perforated, rectangular, open top, bottom section, having front and rear walls, main transverse wall, opposed side walls and a flat base; and

a plurality of spaced apart prong-like positioning means attached to and extending upwardly from said flat base, arrange in a plurality of spaced apart rows, each positioning means adapted to receive thereover a nipple or associated ring and cap components to hold them in a fixed position during the dishwashing machine cycles; and

a perforated top section having means for engaging and closing the open top of said bottom section to confine said nipple and ring and cap components positioned within said bottom section; and

securing means attached to said accessory for fastening said accessory at front and rear walls to an article rack of said conventional automatic dishwashing machine.

4,498,595

ICE BLOCK MAKING AND STORAGE SYSTEM

Roland B. Wilson, 1207 S. Lafayette St., Fort Wayne, Ind. 46802

Filed Sep. 28, 1982, Ser. No. 424,901
Int. Cl.³ A47B *47/00*
U.S. Cl. 211—194 **3 Claims**

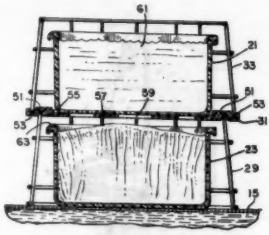
1. An apparatus for the freezing of water in large blocks of ice comprising in combination:

a plurality of support racks each of a generally truncated pyramidal configuration with open generally parallel top and bottom faces each of a generally rectangular shape and trapezoidal side walls of an open mesh configuration;

a plurality of relatively flat floor panels of generally rectangular outline each having a first groove on the lower face spaced inwardly around the entire periphery and adapted to receive upper edges of the side walls of a subadjacent

rack for locking said panel and subadjacent rack together to prevent sideward movement;

said floor panels having a second groove on the upper face spaced inwardly around the entire periphery and adapted to receive the lower edges of a superior rack for locking said superior rack with said floor panel to prevent sideward movement and permit said panels and racks to form a columnar configuration; and



a plurality of containers adapted to be filled with water and arranged in a vertical column with the lowermost container resting on the floor of a freezer and subsequent containers each resting on one of said floor panels and each container except the uppermost one being surrounded by one of said racks.

4,498,596

SUPPLEMENTARY EQUIPMENT FOR USE WITH A SELF-PROPELLED CRANE WITH A TELESCOPIC JIB

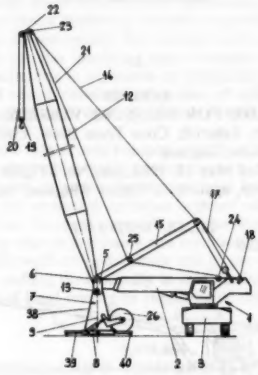
Georges Haulotte, La Ravoire, France, assignor to Société des Ateliers de Construction, La Ravoire, France

Filed May 27, 1983, Ser. No. 498,992

Claims priority, application France, Jun. 11, 1982, 82 10185

Int. Cl.³ B66C *23/78, 23/04, 23/26*

U.S. Cl. 212—189 **4 Claims**



1. A crane assembly comprising a self-propelled crane having a self-propelled chassis, a telescopic jib mounted on said chassis, and supplementary equipment, said assembly comprising

(a) support means comprising a platform, means providing fixed support for said platform on the ground, a structure supported on said platform, means connecting said structure to the head of said jib of said crane, and means permitting pivotal movement of said structure relative to said platform;

(b) an auxiliary jib having a head and a foot, means articulating said foot of said auxiliary jib relative to said head of said jib of said crane, pulley means for a hoisting cable, and means mounting said pulley means at said head of said auxiliary jib;

(c) strut means, means articulating one end thereof to the foot of said auxiliary jib, auxiliary reeving connecting the other end of said strut means to a first winch on said crane, and cable means connecting said other end of said strut means to said head of said auxiliary jib; and

(d) lifting mans, and a hoisting cable therefor passing over said pulley means on said head of said auxiliary jib and connected to a second winch.

4,498,597

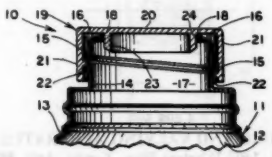
CONTAINER AND CLOSURE

Joseph E. Bashour, R.R. #3, Glynwood, Wapakoneta, Ohio 45895

Filed Jan. 20, 1984, Ser. No. 572,403

Int. Cl.³ B65D *41/04*

U.S. Cl. 215—329 **6 Claims**



1. In combination, a container and a closure; the container having a threaded neck portion and a flexible lip portion extending inwardly and upwardly from the top of said neck portion defining the opening for the container; the closure having a top portion, a threaded annular skirt depending from the periphery of said top portion for cooperating with said threaded neck portion of the container, and an annular sealing ring depending from said top portion and spaced from said annular skirt such that said sealing ring enters the opening in the container when said annular skirt threadably engages said neck portion; said sealing ring of the closure having an outer diameter which is smaller than the inner diameter of said lip portion of the container so that said lip portion first engages said top portion of the closure and thereafter said top portion bends said lip portion toward said sealing ring and in contact therewith when said annular skirt threadably engages said neck portion.

4,498,598

COLLAPSIBLE CONTAINER

Ik J. Bae, Taegu, Rep. of Korea, assignor to Dong Hwa Engineering Co. Ltd., Seoul, Rep. of Korea

Filed Jun. 29, 1983, Ser. No. 509,179

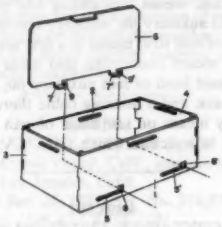
Claims priority, application Rep. of Korea, Nov. 3, 1982, 1866/82

Int. Cl.³ B65D *7/24*

U.S. Cl. 220—6 **3 Claims**

1. A collapsible container comprising four plates forming the front, back, left and right walls respectively, said walls being hingedly connected to one another, said container further comprising a bottom plate having at least two L-shaped projections at one side thereof, the lower part of said front wall having at least two openings corresponding to said L-shaped projections, said L-shaped projections being characterized by having holding protuberances substantially parallel to the surface of said bottom plate, said two openings being characterized by having a variable cross section sufficiently large in part to allow said L-shaped projections to pass therethrough

when said bottom plate is placed on said front wall, and sufficiently small in part to prevent said L-shaped projections from



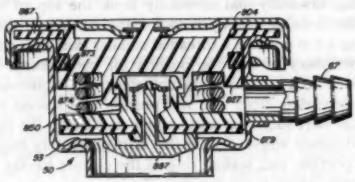
passing therethrough when the respective positions of said front wall and said bottom plate are changed.

4,498,599

CLOSURE AND VALVING APPARATUS

Walter C. Avrea, 1405 Whalers Way, Tempe, Ariz. 85283

Filed Aug. 15, 1983, Ser. No. 523,447
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—203 **59 Claims**



1. In a closure and valving apparatus for use in connection with the filler neck of a pressurized liquid cooling system, which filler neck includes

a tubular body having a generally cylindrical inner surface,

an upper open end having an annular gasket seat,

engagement receiving means proximate said open end and having a lock position and an unlock position,

and which closure and valving apparatus includes

an attachment member having engagement means connectable with the engagement receiving means of said filler neck,

said attachment member being rotatable between said lock position and said unlock position,

an upper carrier having an upright cylindrical sidewall and an upper end wall,

union means for rotatably securing said upper carrier to said attachment member, and

an atmospheric seal, comprising a first atmospheric seal, carried by the cylindrical sidewall of said upper carrier and sealingly engagable with the inner surface of said filler neck,

improvements therein for sealingly closing the open end of said filler neck, said improvements comprising:

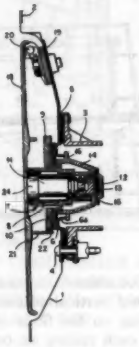
atmospheric seal means, comprising a second atmospheric seal, for sealing engagement with the annular gasket seat at the open end of said filler neck.

4,498,600

FILLER CAP HAVING A HINGED COVER

Didier Blion, Le Chesnay, France, assignor to Automobiles Citroen, Neuilly s/Seine and Automobiles Peugeot, Paris, both of, France

Filed May 24, 1983, Ser. No. 497,763
Claims priority, application France, May 25, 1982, 82 09316
Int. Cl.³ B65D *51/18*
U.S. Cl. 220—255 **7 Claims**



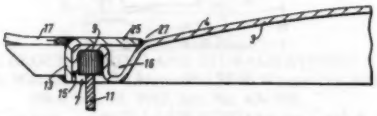
1. In a filler cap, particularly for automobile vehicle gas tanks, which comprises a hinged flap coupled with a lockable closing element, the flat and the closing element being coupled together in such a manner as to give way when an effort exerted on the flap reaches a certain threshold, said flap being fast with at least two flexible tongues directed inwardly of the cap and whose ends comprise retaining hooks adapted to clip on the closing element.

4,498,601

LIDS FOR PRESSURE VESSELS

Edward S. Fort, Ashcroft, Crow Trees Brow, Chatburn, Clitheroe, Lancashire, England

Filed May 12, 1982, Ser. No. 377,590
Claims priority, application United Kingdom, May 13, 1981, 8114559
Int. Cl.³ B65D *51/18*
U.S. Cl. 220—256 **17 Claims**



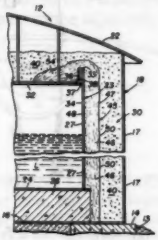
1. A man-lid for a container tank comprising a one piece inner skin having an inturned flange which defines in part an annular seal groove formed in the inner skin by pressing and a reinforcing member disposed externally of the inner skin and having a part which is L-shaped in cross-section and which backs-up the inner skin in the region of the seal groove, an inturned peripheral flange of said L-shaped part being contigous with the inturned flange of the inner skin and an external edge of said peripheral flange being welded to the inturned flange of the inner skin.

4,498,602

RESILIENT BLANKET WITH INTEGRAL HIGH STRENGTH FACING AND METHOD OF MAKING SAME

Stanley E. Sattelberg, Naperville, and George A. Baker, Batavia, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Dec. 8, 1983, Ser. No. 559,485
Int. Cl.[3] B65D *7/22*
U.S. Cl. 220—452 9 Claims



1. A tank for storing liquids at cryogenic temperatures, comprising:

an inner storage vessel for receiving and retaining the liquids and having top and bottom walls and an upstanding cylindrical side wall;

an outer vessel enclosing said inner storage vessel and having top and bottom walls and an upstanding cylindrical side wall respectively spaced from the top, bottom, and cylindrical side wall of said inner storage vessel, said spaced cylindrical side walls defining an annular insulating space therebetween;

a composite resilient blanket having opposite sides and a low temperature compressive resiliency disposed in and filling a portion of said insulating space between said cylindrical side walls;

a free mass of substantially free-flowing, lightweight, granular insulating material disposed in the remainder of said insulating space between said cylindrical side walls;

the compressive resiliency of said composite blanket being such as to compensate for changes in the radial thickness of said annular insulating space between said cylindrical side walls, due to expansion or contraction of one or both of said vessels relative to the other of said vessels, so that attrition of said mass of granular insulating material is minimized; and

at least one side of said composite resilient blanket having a layer of flexible, strengthening material bonded thereto, said layer of strengthening material being effective to resist the vertical drag forces imposed on said blanket by said free flowing mass of granular insulating material during relative expansion and contraction of the cylindrical side walls of said vessels and to prevent said blanket from shifting downwardly in said insulating space in the event of local tearing or rupturing of the same.

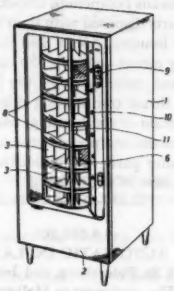
4,498,603

VENDING MACHINE COMPRISING AT LEAST ONE DRUM

Poul E. Wittenborg, Odense, Denmark, assignor to Wittenborgs Automatfabriker A/S, Odense, Denmark

Filed Sep. 14, 1982, Ser. No. 417,925
Claims priority, application Denmark, Nov. 3, 1981, 4846/81
Int. Cl.[3] G07F *11/54*
U.S. Cl. 221—76 8 Claims

1. In a vending machine comprising at least one drum pivotably mounted about a vertical shaft and provided with vertical partitions defining a discharge opening at the periphery of each of the at least one drum, through which opening an article is removable when a customer has activated the vending machine in an appropriate manner, said vending machine furthermore comprising a front pane rendering it possible for the customer to see the articles contained in the drum, the improvement comprising that the front pane (**4**) comprises an outer pane (**11**) and an inner pane (**12**) associated with each of the at least one drum, the inner and outer panes being pivotably mounted about a vertical shaft, that the outer pane (**11**) is connected to a motor (**21**) so that at activation of the vending machine said outer pane is temporarily opened by being turned a predetermined distance to one side until the customer has removed the desired article, that the inner pane (**12**) comprises a first and second dog (**64**, **63**), the first (**64**) of said dogs being adapted to cooperate with the outer pane (**11**) in such a manner



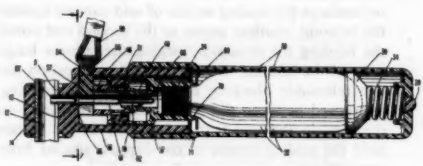
that a chosen inner pane (**12**) follows at least part of the opening movement of the outer pane (**11**), the second dog (**63**) being adapted to co-operate with the outer pane (**11**) so that the chosen inner pane (**12**) follows the closing movement of the outer pane, and that one of the inner pane (**12**) and the parts permanently connected thereto comprises separately releaseable catching means (**46**) releasably engaging abutting means (**49**) during the opening movement so that the inner pane (**12**) is stopped and the discharging opening (**8**) is laid open, said abutting means being associated with a partition (**6**) of the discharge opening (**8**), which is situated adjacent the open position of the outer pane (**11**) so that the drum follows the inner pane (**12**) during the closing movement thereof.

4,498,604

AUTOMATIC INFLATOR

Glenn H. Mackal, 4923 59 Ave. S., St. Petersburg, Fla. 33702

Filed Jul. 26, 1982, Ser. No. 401,652
Int. Cl.[3] B67B *7/24*
U.S. Cl. 222—5 11 Claims



1. An automatic inflator which inflates gas-inflatable articles by the release of compressed gas from a gas-containing capsule by the piercing of a sealing means on the capsule, comprising

an elongated housing having first and second end portions, the housing receiving a compressed gas-containing capsule for longitudinal movement with respect thereto and with the sealing means on the capsule disposed adjacent the second end portion of the housing,

a piercing pin mounted on the second end portion of the housing to confront the sealing means of a capsule

mounted therein, resilient means at the first end portion of the housing for constantly urging the capsule longitudinally of the housing toward the second end portion thereof,

a releasable blocking means adjacent the second end portion of the housing and interposed between the sealing means-containing end of the capsule and said end portion of the housing to hold the sealing means of the capsule spaced from the piercing pin,

the blocking means including a water-sensitive means which when wet releases the blocking means so that the resilient means moves the capsule toward the piercing pin so that the sealing means of the capsule is pierced thereby,

the blocking means comprising telescopically disposed inner and outer parts disposed with their axes aligned longitudinally of the housing, one of said inner and outer parts of the blocking means engaging the capsule and the other of said inner and outer parts of the blocking means being disposed in thrust transmitting relationship with the second end portion of the housing, and

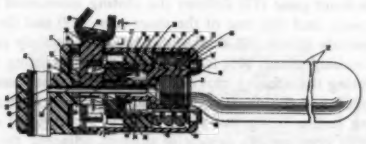
a supporting means interposed between the said other of said inner and outer parts of the blocking means and the second end portion of the housing.

4,498,605

AUTOMATIC INFLATOR

Glenn H. Mackal, St. Petersburg, and John S. TenBarge, Clearwater, both of Fla., assignors to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Jul. 29, 1982, Ser. No. 402,918
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—5 **10 Claims**



1. An automatic inflator which inflates gas-inflatable articles by the release of compressed gas from a gas-containing capsule by the piercing of a sealing means on the capsule, comprising

an elongated housing having first and second end portions,

the housing receiving the neck of a compressed gas-containing capsule for longitudinal movement with respect thereto and with the sealing means on the capsule disposed adjacent the second end portion of the housing,

a piercing pin mounted in the first end portion of the housing to confront the sealing means of said capsule mounted in the housing, resilient means at the second end portion of the housing for constantly urging the capsule longitudinally of the housing toward the first end portion thereof,

and a releasable blocking means within the housing and interposed between the sealing means-containing end of the capsule and said first end portion of the housing to hold the sealing means of the capsule spaced from the piercing pin,

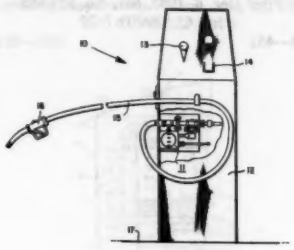
the blocking means including a water-sensitive means which when wet releases the blocking means so that the resilient means moves the capsule toward the piercing pin so that the sealing means of the capsule is pierced thereby, the blocking means comprising telescopically disposed inner and outer parts disposed with their axes aligned longitudinally of the housing, one of said inner and outer parts of the blocking means engaging the capsule and the other of said inner and outer parts of the blocking means being disposed in thrust transmitting relationship with the first end portion of the housing.

4,498,606

EMERGENCY FUEL FLOW SHUT-OFF DEVICE

Armand DiRienzo, 803 New Chestnut St., Bristol, Pa. 19007

Filed Nov. 18, 1982, Ser. No. 442,632
Int. Cl.³ B67D *5/32*
U.S. Cl. 222—52 **10 Claims**



1. For use in combination with a fuel dispenser having a delivery hose and a pipe for supplying fuel under pressure to said hose, emergency fuel flow cut-off apparatus comprising:

an electrically actuated servo control valve adapted to be connected to said pipe,

a short length of conduit having a zone of reduced wall thickness providing a frangible section located between opposite ends thereof,

means connecting one upstream end of said conduit to said control valve,

means adapted to connect the other downstream end of said conduit to said delivery hose,

means mounted closely adjacent to said upstream end of said conduit to detect breakage of said frangible section and to produce an electrical signal, said breakage detecting means including an actuator disposed adjacent to the outside of said conduit only between said zone of reduced wall thickness and said hose connected other end, and operable in response to breakage of said reduced wall thickness zone to produce said electrical signal, and

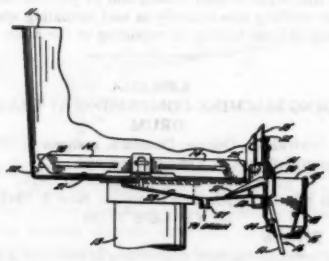
means for transmitting said signal to said control valve for causing the same to halt the flow of fuel from said delivery pipe.

4,498,607

ADJUSTABLE RATE ICE CUBE DISPENSER

John J. Jaschinski, Two Rivers, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Nov. 1, 1982, Ser. No. 438,330
Int. Cl.³ B67D *5/62*
U.S. Cl. 222—146.6 **4 Claims**



1. An ice cube dispenser comprising, in combination, an ice cube storage bin having a bottom and a generally cylindrical lower wall surrounding said bottom, said bottom having an arcuate ramp spiraling down from the level of the bottom

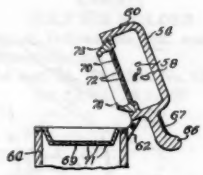
along a section of said wall and ending at an opening in the wall substantially larger than the largest ice cubes intended to be dispensed, a motor driven agitator blade mounted for rotation within said wall and just above said bottom so as to sweep ice cubes in said bin along said ramp and out of said opening, a deflector plate having an elongated surface resting at one end of said ramp and extending at the other end through said opening, means for vertically adjusting the point where said plate surface passes through said opening so as to vary the size of said opening with the plate surface effectively changing the ice cube path from the ramp to the adjustably sized opening.

4,498,608

MOISTURE ABSORBENT CONDIMENT CONTAINER

Robert A. Mercil, Star Rte., Box 315, Wetmore, Mich. 49895

Filed Apr. 5, 1982, Ser. No. 365,624
Int. Cl.³ B67D *5/58*
U.S. Cl. 222—190 **2 Claims**



1. A condiment container comprising,

a body forming a container proper in the form of a jar having an interior space and an opening at the top of substantial width relative to the width of the jar,

a first perforated disc detachably secured to the jar in position extending across the opening, enabling gases to pass freely through the perforations thereof while enabling particles of condiment in the jar to pass therethrough in response to shaking the jar in inverted position,

a cap having an open end and a closed end and movable between a closed position closing the opening and having its open end directed to the jar in that position, and an open position exposing the opening, the cap being of a width similar to the width of the jar,

a second perforated disc detachably secured in and carried by the cap and positioned therein so that when the cap is in closed position it is adjacent to and parallel with the first perforated disc,

the cap being of such dimensions and the second perforated disc being so positioned in the cap, as to form an interior space therein between the second perforated disc and the closed end of the cap, for containing an absorbent material,

the two discs enabling the passage of gases and vapors therethrough between the two interior spaces for carrying of moisture from the condiment to the absorbent material, and the discs being so positioned that when the cap is in closed position, they interengage and seal the interior spaces against the exterior,

hinge means mounting the cap on the container proper, and

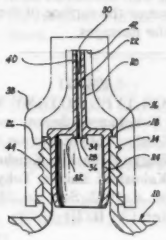
the first perforated disc in the jar being dish shaped and extending into the interior of the jar, and the second perforated disc in the cap including a depending flange which, when the cap is in closed position, extends into the dish shaped first perforated disc, and operates to locate the cap in centered position.

4,498,609

DROPPER FOR CYANOACRYLATE ADHESIVES

Hugh J. Stock, Saratoga, Calif., assignor to Pacer Technology and Resources, Inc., Campbell, Calif.

Continuation-in-part of Ser. No. 69,748, Aug. 27, 1979,. This application Dec. 26, 1979, Ser. No. 107,334
Int. Cl.³ B65B *47/18*
U.S. Cl. 222—420 **3 Claims**



1. A self-clearing dispenser for dispensing adhesives, which adhesives cure by polymerization, said dispenser comprising in combination:

(a) a necked container for housing the adhesive prior to dispensation;

(b) a nozzle of monolithic contruction having an annular flange defining an essentially planar surface from which surface depends a skirt and which skirt is press fitted into the neck of said container to effect a seal between said nozzle and said container;

(c) a boss depending from said planar surface into said container, said boss including a sharp edged perimeter;

(d) an inlet disposed in said boss and defined by a sharp edged orifice; and

(e) an adhesive conveying passageway extending from said inlet through said nozzle, said passageway terminating at an outlet having a sharp edged orifice;

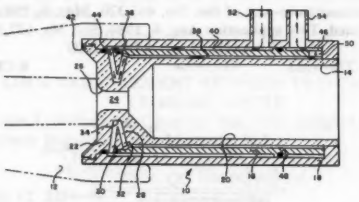
whereby, the configuration of structure attendant said inlet minimizes clogging of said inlet by the adhesive.

4,498,610

ULTRAHIGH VELOCITY WATER-COOLED COPPER TAPHOLE

Patrick J. Wooding, Moorestown, N.J., assignor to Wooding, Indian Mills, N.J.

Filed Oct. 13, 1981, Ser. No. 311,042
Int. Cl.³ B22D *41/08*
U.S. Cl. 222—592 **8 Claims**



1. A taphole for a melting furnace comprising:

a metallic member having an axially extending inner working surface defining an orifice and a substantially tubular portion through which molten material from a furnace can pass;

a coolant guide disposed coaxially around at least part of said tubular portion and closely spaced therefrom thereby defining an annular space therebetween extending sub-

stantially the length of said coolant guide and forming a first highly restrictive narrow flow passage;

a second highly restrictive narrow flow passage in the area around said orifice, said second passage being in relatively close proximity to but being isolated from said working surface; and

liquid coolant supply means in communication with said passages for supplying coolant thereto whereby the velocity of the coolant will be accelerated to an ultrahigh velocity across and against the surface of the passage walls as it passes through the passages.

4,498,611

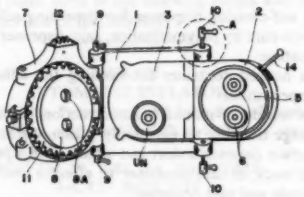
DUAL DOOR TYPE ROTARY NOZZLE

Tetsuya Yoshihara, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo; Nippon Rotary Nozzle Co., Ltd.; Kokan Kikai Kogyo Kabushiki Kaisha, both of Kawasaki and Tokyo Yogyo Kabushiki Kaisha, Tokyo, all of, Japan

Filed Mar. 4, 1982, Ser. No. 354,535

Int. Cl.³ B22D *37/00*

U.S. Cl. 222—599 **8 Claims**



1. A dual door type rotary nozzle for a ladle used in iron or steel making, said nozzle comprising: a bottom plate brick and a sliding plate brick each having plural nozzle openings, said sliding plate brick being rotatable and disposed under said bottom plate brick, said bottom and sliding plate bricks being swingably mounted for opening and closing in a dual door configuration, said bottom plate brick housed in and rotatably carried by a receiver metal fixture, which in turn is carried by one side of a base plate having a recess for housing the bottom plate brick, said sliding plate brick housed in and rotatably carried by a sliding plate receiver-rotor metal fixture which in turn is carried by the other side of said base plate.

4,498,612

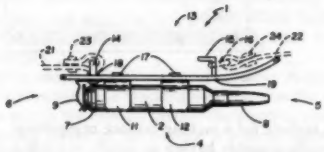
CARTRIDGE AND SHOTGUN SHELL CARRYING BUCKLE

James A. Geekie, Jr., 443 Merrimac St., Newburyport, Mass. 01950

Continuation-in-part of Ser. No. 463,320, Mar. 9, 1983, abandoned. This application Aug. 6, 1984, Ser. No. 637,350

Int. Cl.³ A44B *11/22;* **A45C** *11/00*

U.S. Cl. 224—163 **6 Claims**



1. A belt buckle adapted for use as a cartridge and shotgun shell holder, comprising:

a flat buckle with a generally rectangular shape, having a front side, a back side, a top, a bottom, a forward end, and a rearward end, the forward end of which is bent backwards approximately thirty-five degrees;

a pluality of spring clips attached to the buckle front side for holding a plurality of cartridges and shotgun shells having conventional primer ends and heads in a generally horizontal configuration with cartridge and shotgun shell heads positioned at the buckle forward end and cartridge and shotgun shell primer ends positioned at the buckle rearward end;

a shield for protection of the cartridge and shotgun shell primers attached to the buckle front side in a vertical arrangement near and parallel to the buckle's rearward end; and

a means for attaching the buckle to a belt.

4,498,613

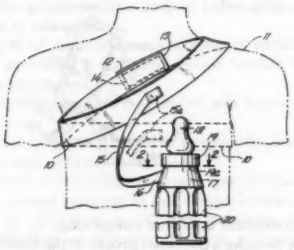
SUPPORT DEVICE FOR NURSING BOTTLES AND AMUSEMENT ITEMS

Barbara S. Donahue, 27 Madison St., Glen Ridge, N.J. 07028, and Irene Ficca, 12 Gilbert Pl., Clifton, N.J. 07011

Filed Oct. 11, 1983, Ser. No. 540,310

Int. Cl.³ A45F *3/14;* **A47D** *15/00;* **A61J** *9/06*

U.S. Cl. 224—251 **4 Claims**



1. A support device for nursing bottles and young child amusement items, said device comprising a body encircling, resilient and adjustable strap of a length to selectively permit mounting of the device on a young child in either an angular, over-the-shoulder, or transverse, under-the-arm, orientation, said strap having secured to a center, front portion thereof one end of a pliable, but non-extendible, band member about 9-inches long, the other end of said band member being fixedly secured to the exterior side of a frustoconically contoured and circumferentially elastic loop member between the ends of said loop member, said loop member having a top diameter of about 1¾-inches and a bottom diameter of about 1¼-inches adapted to interlockingly engage the neck portions of nursing bottles, below the nipple retainers thereof, and undercut portions of amusement devices.

4,498,614

STORAGE DEVICE FOR SPARE TIRE

David Guarr, 6130 Westgate, Shawnee, Kans. 66216

Filed Jun. 23, 1983, Ser. No. 507,132

Int. Cl.³ B60R *11/06*

U.S. Cl. 224—273 **19 Claims**

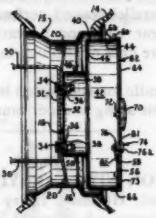
18. A storage device for installation on a spare tire assembly mounted on the exterior of a vehicle and having a wheel rim, said device comprising:

a rigid container having a hollow interior presenting a storage compartment and an open end providing access to said storage compartment, said container having sufficient size to hold and store loose articles such as tools and said container having a size and shape to fit closely within the wheel rim;

means for securing said container to said spare tire assembly at a location within the wheel rim and with said open end

at an accessible location to permit the loose articles to be inserted into and removed from said container through said open end;

a cover for said container having a size to cover the open



end thereof to enclose said storage compartment and the contents thereof; and

means for locking said cover on said container in position to cover said open end, whereby to enclose said storage compartment and the contents thereof.

4,498,615

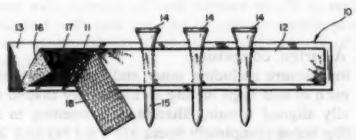
GOLF TEE HOLDER

Elizabeth A. Johnson, Indianapolis, Ind., assignor to Edward J. Erpelding, Indianapolis, Ind.

Filed Aug. 26, 1983, Ser. No. 526,552

Int. Cl.³ A63B 57/00

U.S. Cl. 224—274 **3 Claims**



1. A method of removably transporting golf tees for use, comprising the steps of:

overlying two strips of synthetic fabric comprising a hook and loop fabric fastening means so as to tightly hold said strips together along their entire contacting surfaces; and

pushing in a golf tee between said strips so as to separate said strips around the shank of said golf tee and hold said golf tee therebetween, said strips being unseparated until said golf tee is pushed in between said strips.

4,498,616

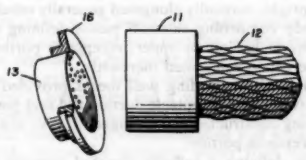
METHOD FOR FRACTURING A TUBE SHEET

Charles J. Runkle, Wake County, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 21, 1983, Ser. No. 553,591

Int. Cl.³ B26F 3/06

U.S. Cl. 225—1 **6 Claims**



1. A process for severing a tube sheet made from a polymeric material to expose bores of hollow fibers having the ends thereof embedded in the tube sheet, said tube sheet having a cylindrical configuration and a stress raiser extending around the periphery thereof in a plane substantially perpendicular to the axis of the tube sheet comprising

(a) positioning a ring on the tube sheet to encircle a portion of said tube sheet at a location adjacent to the stress raiser, said ring having a coefficient of expansion less than the coefficient of expansion of said polymeric material, and

(b) heating the tube sheet to expand said tube sheet to the point where stress causes the tube sheet to fracture off said portion from the remainder of the tube sheet to expose the bores of the fibers.

4,498,617

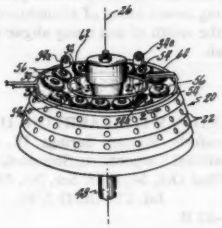
METHOD FOR RESHAPING A GAS TURBINE ENGINE COMBUSTOR PART

Joseph J. Guertin, Bristol, and Earl J. Provencal, Plainville, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 31, 1983, Ser. No. 480,658

Int. Cl.³ B23K 9/235, 9/225, 37/04

U.S. Cl. 228—119 **6 Claims**



1. The method of shaping an annular combustor liner made of a high temperature alloy and usable in a gas turbine engine, wherein the liner is comprised of a generally cylindrical wall section centered about an axis, a circular flange section attached to the cylindrical wall section and extending generally transverse to the axis, and a plurality of circumferentially spaced apart rings attached to the flange, each defining an opening through the flange which is suitable for receiving a fuel nozzle or the like; which method comprises simultaneously heating a first circumferential band of the liner where the wall section joins the flange section and a second circumferential band around the flange on the opposing side of the rings from the first band; and while the bands are heated, moving the rings generally radially with respect to the axis to a position displaced from their start position, and then cooling the heated band regions while holding the rings in their displaced position.

4,498,618

LOCK ARRANGEMENT BETWEEN TWO CARTON CLOSURE PANELS

Robert L. Sutherland, Campbell Hall, N.Y., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

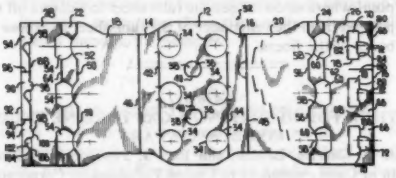
Filed Aug. 12, 1983, Ser. No. 522,575

Int. Cl.³ B65D 5/02

U.S. Cl. 229—40 **16 Claims**

1. A lock arrangement between two carton closure panels, one of said closure panels being an inner panel and the other of said closure panels being an outer panel, each of said closure panels having a free edge, said inner panel having struck therefrom a secondary flap hingedly connected to said inner panel remote from said inner panel free edge and carrying generally at one side thereof a secondary locking tab projecting towards said inner panel free edge, the striking of said secondary flap and said secondary locking tab define in said inner panel a

locking aperture having at a side thereof remote from said secondary locking tab a primary locking shoulder facing away from said inner panel free edge, said outer panel carrying a primary locking panel generally along a hinge line, said primary locking panel carrying a primary locking tab struck from said outer panel and extending across said hinge line, locking means for said secondary locking tab spaced along said hinge



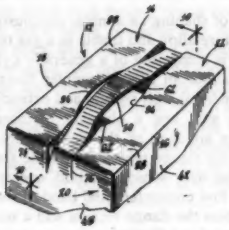
line from said primary locking tab, and an aperture in said terminal flap between said primary locking tab and said locking means for said secondary locking tab, said secondary flap being aligned with and fully extending the width of said primary locking tab, said aperture in said primary locking panel and said locking means being of a combined dimension generally equal to the width of and being aligned with said secondary locking tab.

4,498,619

CARTON WITH CARRYING HANDLE

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 24, 1983, Ser. No. 544,866
Int. Cl.³ B65D *5/46*
U.S. Cl. 229—52 B **14 Claims**



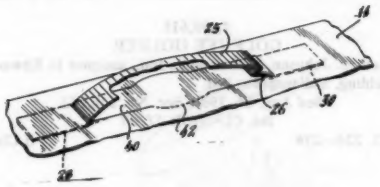
1. A carton, comprising
top and bottom walls;
front, back and side walls connected to said top and bottom walls;
said top wall having inner and outer panels extending from said front and back walls, respectively, and having portions thereof overlapped and secured together;
first and second side flaps extending from opposite top edges of said side walls having portions thereof secured to the lower surface of said overlapped inner and outer top wall panels;
inner and outer elongated handle panels connected together formed from the overlapped portions of said inner and outer top panels and said side flaps, extending substantially parallel to and equally spaced from the top edges of said front and back walls and substantially perpendicular to said side walls,
said outer handle panel being defined by a perforated score line formed in said outer top panel which extends lengthwise across said outer top panel and substantially parallel to the top edges of said front and back walls; and
said inner handle panel being defined by
perforated score line formed in said inner top panel which extends lengthwise across said inner top panel and is substantially parallel to and spaced from the top edges of said front and back walls and the perforated scoreline in said outer top panel, and
a substantially U-shaped tab in each of said side flaps having a pair of parallel spaced perforated score lines substantially colinear with and beneath the spaced perforated parallel score lines of said overlapped inner and outer top panels,
whereby a handle for said carton is formed by severing said handle panels along said perforated score lines.

4,498,620

CARTON WITH CARRYING HANDLE

James C. Dickert, Hinsdale; Harry I. Roccaforte, Western Springs, and Lawrence S. Wysocki, Chicago, all of Ill., assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 408,012, Aug. 13, 1982, abandoned.
This application Apr. 11, 1984, Ser. No. 598,403
Int. Cl.³ B65D *5/46*
U.S. Cl. 229—52 A **6 Claims**



1. A carton, comprising:
a top closure including inner and outer overlapping flaps, each of said flaps having an identically shaped and coaxially aligned opening therein, said opening in said outer flap being completely open;
a carrying handle having opposite ends secured to an inner surface of said inner flap adjacent said opening therein and a central portion extending upwardly through said openings; and
a panel shaped identically to said opening in said inner flap and hingedly coupled to said inner flap along a curved fold line defining a portion of said opening in said inner flap, said panel being pivotable between an open position permitting said handle to pass through said opening in said inner flap and a closed position substantially sealing said opening in said inner and outer flaps.

4,498,621

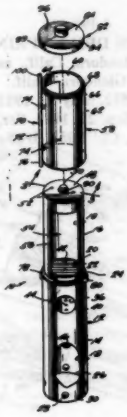
COMBINED MAILBOX AND SUPPORTING POST

Jeffrey S. Diamond, 330 Brazilian Ave., Palm Beach, Fla. 33480

Filed Mar. 2, 1984, Ser. No. 585,372
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—35 **20 Claims**

1. A combined mailbox and supporting post comprising:
an upright, vertically elongated generally tubular cylindrical body comprising sidewall means defining a lower, post portion having an upper, receptacle portion juxtaposed thereupon and united therewith;
transversally extending wall means provided in said body between said receptacle portion and said post portion and being constructed and arranged to serve as a floor for said receptacle portion;
means defining a radially directed opening through said sidewall means above said floor for providing access to within said receptacle portion;
means providing an upper end wall on said body for said receptacle portion; and
a tubular cylindrical closure sleeve having a sidewall pro-

vided with means defining an opening radially therethrough, said closure sleeve being coaxially rotatably mounted on said body in surrounding relation to said sidewall means of said receptacle portion and being constructed and arranged for angular movement between one extreme wherein both of said openings are aligned so that



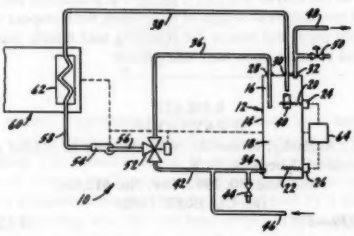
mail may be inserted into and retrieved from the receptacle portion through said openings, and another extreme wherein said opening of said closure sleeve is entirely non-aligned with said opening of said receptacle portion and said closure sleeve fully closes said opening of said receptacle sleeve.

4,498,622

QUICK RECOVERY HEAT PUMP WATER HEATER

James R. Harnish, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 23, 1983, Ser. No. 497,481
Int. Cl.³ F28F *27/00*
U.S. Cl. 236—25 R **10 Claims**



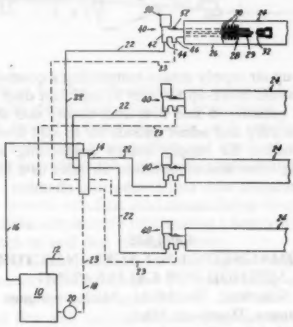
1. A quick recovery water heater comprising a water storage tank defining first and second tank portions, sensing means for indicating the demand for hot water in said first and second tank portions, an external heat source including a heat exchanger having a water inlet and a water outlet, means for selectively communicating said first and second tank portions with said water inlet and for communicating said water outlet with said tank, means for pumping water from said tank through said communicating means to said water inlet and from said water outlet to said tank, and control means for said communicating means, said control means being responsive to an indication from said sensing means of a demand for hot water in said first tank portion for initially establishing communication of said first tank portion with said water inlet and turning on said external heat source and pumping means, said control means being responsive to an indication from said sensing means that the demand for hot water in said first tank portion has been satisfied for subsequently establishing communication of said second tank portion with said water inlet, and said control means being responsive to an indication from said sensing means that the demand for hot water in said second tank portion has been satisfied for turning off said external heat source and pumping means.

4,498,623

HOT WATER HEATING SYSTEM

Derek E. Rodd, San Anselmo, Calif., assignor to Minitube Systems, San Anselmo, Calif.

Filed Jan. 15, 1982, Ser. No. 339,306
Int. Cl.³ F24D *3/00*
U.S. Cl. 237—8 R **8 Claims**



1. A forced circulation heating system comprising:
water heating means,
a radiator, a manifold,
a supply conduit connected from said heating means to said supply chamber and a return conduit connected from said return chamber back to said heating means.
a divider wall across manifold to form a supply chamber and a return chamber on opposite sides thereof,
a supply duct connecting said supply chamber to the inlet of said radiator,
a return duct connecting the outlet of said radiator to said return chamber,
said divider wall being formed with a relatively small aperature therethrough positioned to permit the restricted passage of water directly from said supply chamber to said return chamber.

4,498,624

CONTROL UNIT WITH SEPARATE DAMPERS FOR MAKE-UP AND COMBUSTION AIR CIRCULATION

Jimmy A. Kogut, 14660 Cavell, Livonia, Mich. 48154

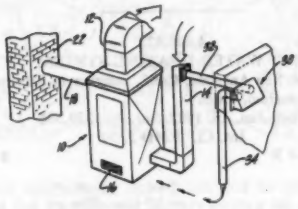
Filed May 7, 1984, Ser. No. 607,439
Int. Cl.³ F24D *5/00*
U.S. Cl. 237—53 **5 Claims**

1. In an air circulating system for a building, said system being of the type including a furnace having a combustion chamber and a heat exchanger, a first duct for conducting air to said heat exchanger, a second duct for conducting air from said heat exchanger, an intermittently operable blower for forcing air flow through said heat exchanger, the passage of air through said first duct causing a reduced pressure in said first duct, and make-up air supply means communicating between the outside of said building and said first duct, the improvement comprising:
a control unit adapted to be mounted in an outside wall of said building and including a baffle defining separate

make-up and combustion air inlets and including a weather protective hood,

said baffle also including a first damper disposed within said make-up air inlet and a second damper disposed within said combustion air inlet, said dampers being mounted for pivotal motion inwardly of said baffle,

coupling means between said dampers for causing concurrent pivotal motion thereof,



said make-up air supply means comprising a conduit extending from said make-up air inlet to said first duct whereby reduced pressure in said first duct causes said damper to open inwardly and admit outside air to said first duct,

and combustion air supply means comprising a conduit extending from said combustion air inlet to a location in communication with said combustion chamber.

4,498,625

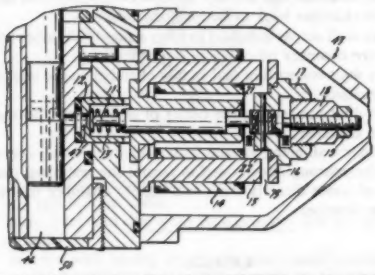
ELECTROMAGNETIC UNIT FUEL INJECTOR AND METHOD FOR CALIBRATING

Michael M. Schechter, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 27, 1983, Ser. No. 508,398

Int. Cl.³ F02M *45/00*

U.S. Cl. 239—5 **10 Claims**



1. An electromagnetic unit fuel injector having a solenoid valve; an injector nozzle; a cam actuated plunger type pumping unit with a spill port adapted to be closed and opened by the action of the solenoid valve during a plunger pumping stroke, the spill port permitting fuel to enter and escape from the pumping unit when the spill port is open and preventing the escape of fuel from the pumping unit when the spill port is closed; the solenoid valve being adapted to receive voltage pulses of variable and controllable duration and timing, the voltage pulse duration and timing controlling the duration and timing of the spill port closing, the duration of the spill port closing controlling the quantity of fuel injected and the timing of the spill port closing controlling the fuel injection timing; the solenoid valve having a mechanism for adjustment of a solenoid air gap associated with the solenoid valve, said mechanism including:

a differential thread arrangment having two pairs of threads so that relative rotation can take place between two threads of each of said two pairs of threads simultaneously and the accuracy of adjustment is determined by the difference between the pitches of said two pairs of threads, so that fine adjustment of the solenoid air gap provides fine adjustment of the quantity of fuel injected without change in the voltage pulse duration.

4,498,626

REACTION DRIVE SPRINKLER

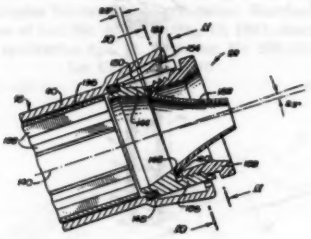
Edward J. Pitchford, Glendora, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Division of Ser. No. 377,552, May 12, 1982, Pat. No. 4,434,937.

This application Sep. 22, 1983, Ser. No. 534,964

Int. Cl.³ B05B *3/08*

U.S. Cl. 239—230 **21 Claims**



1. In a rotatable water sprinkler having a range tube for rotatable connection with respect to a water supply pipe to receive water therefrom and to project the water in the form of a stream from a discharge barrel portion extending laterally outwardly with a selected angle of inclination with respect to the supply pipe, and means for rotating the range tube with respect to the supply pipe, the improvement comprising:

a discharge nozzle assembly mounted generally at the discharge end of the barrel portion and including a nozzle insert through which the water stream is projected, a support member including means defining a seat presented axially outwardly in slight axial misalignment with respect to the barrel portion for seated reception of said nozzle insert, means for connecting said support member generally to the end of the barrel portion at a selected one of at least two different angles of inclination with respect to the supply pipe, and means for retaining said nozzle insert in seated relation upon said seat means.

4,498,627

SPRAY HOOP

Richard C. Arginsky, Ellenville, N.Y., assignor to Master Juvenile Products, Ellenville, N.Y.

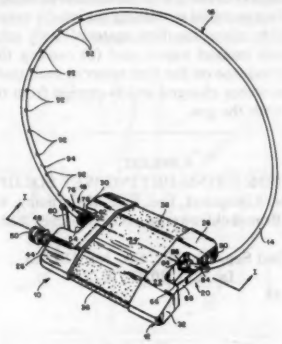
Filed Aug. 30, 1982, Ser. No. 412,956

Int. Cl.³ B05B *15/06*

U.S. Cl. 239—279 **4 Claims**

1. A spray hoop, comprising a base including an interior chamber of a capacity sufficient to retain enough water to stabilize said spray hoop, an inlet located at one end of said base in fluid communication with said interior chamber thereof, a manually adjustable valve positioned in said inlet, a first outlet located at said one end of said base in fluid communication with said interior chamber thereof, and a second outlet located at an opposite end of said base in fluid communication with said interior chamber thereof; a semi-rigid hose connected between said first and second outlets of said base such that said hose is bent into a generally vertically arranged hoop which is in constant fluid communication with said interior chamber of said base when said hose is connected between said first and second outlets and which is sized and shaped to permit an individual to pass therethrough when said hose is

connected between said first and second outlets of said base, said hose including a plurality of orifices spaced at intervals along an inner circumferential surface of said hose, each of said



orifices directing water radially inward relative to the hoop formed by said hose to thereby spray an individual running through the hoop; and locking means for releaseably locking the hoop formed by said hose in a generally vertical position.

4,498,628

BUTTERFLY SPRINKLER

Alfred D. Tucker, Adelaide, Australia, assignor to RIS Irrigation Systems Pty Ltd, Elizabeth, Australia

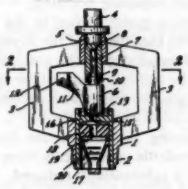
PCT No. PCT/AU80/00101, § 371 Date Jul. 15, 1981, § 102(e) Date Jul. 15, 1981, PCT Pub. No. WO81/01528, PCT Pub. Date Jun. 11, 1981

PCT Filed Nov. 28, 1980, Ser. No. 285,089

Claims priority, application Australia, Nov. 29, 1979, PE1532

Int. Cl.³ B05B *3/06, 3/08*

U.S. Cl. 239—381 **8 Claims**



1. A butterfly sprinkler having a rotational head and comprising a body having means to fix it to a support and having upstanding arm means thereon to support a bearing in axial alignment with an orifice in said body and shaped to define a space to accommodate said head characterized by a shaft upwardly projecting from the said head arranged to engage in the said bearing, the said shaft having a larger diameter portion at the said rotational head, the said bearing having a depending skirt arranged to encircle the said larger diameter portion of the shaft to form a protective shroud against ingress of foreign matter to the said bearing, further characterized in that the said bearing is positionable on the said arm means to allow the rotating head to be positioned over the said orifice and then held confined with some axial movement between the said bearing and the said body when the said bearing is positioned, said body being hollow, a cylindrical sleeve lining the said hollow body arranged co-axially with the said bearing and having a membrane extending across it near one end with said orifice therethrough co-axial with the said sleeve, said membrane with the said sleeve forming a recess in which that end of the said head remote from the said bearing is freely accommodated to prevent significant lateral displacement of that end of the said head.

4,498,629

APPARATUS FOR VAPORIZATION OF A HEAVY HYDROCARBON FEEDSTOCK WITH STEAM

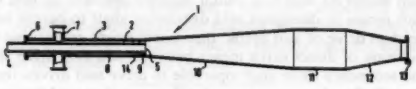
Alexander Grondman, Klundert, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 23, 1983, Ser. No. 477,994

Claims priority, application United Kingdom, May 26, 1982, 8215352

Int. Cl.³ B05B *7/04*

U.S. Cl. 239—434.5 **6 Claims**



1. Apparatus for the vaporization of a heavy hydrocarbon feedstock with steam, said apparatus comprising:

first and second tubular elements, said tubular elements having a uniform cross-section and disposed coaxially to form an annular space surrounding said first tubular element;

first inlet means, said first inlet means being coupled to said first tubular element for introducing a heavy hydrocarbon feedstock to said first tubular means;

second inlet means, said second inlet means being coupled to said second tubular element for introducing superheated steam to said annular space;

both said first and second tubular elements terminating in open ends arranged in a plane perpendicular to the longitudinal axis of the tubular elements, said open ends supplying said steam as a nonswirling annulus around a core of said hydrocarbon; and

a frustoconical shaped element, having an apex angle of less than 20 degrees, the small end of said frustoconical shaped element being coupled to the open end of said second tubular element, the axis of said frustoconical element being coaxial with said first and second elements.

4,498,630

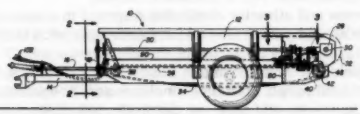
DRIVE MECHANISM FOR A MANURE SPREADER

Loren G. Sadler, Stevens, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 30, 1982, Ser. No. 413,106

Int. Cl.³ A01C *17/00*

U.S. Cl. 239—677 **12 Claims**



1. A manure spreader having a box-like mobile body with a rear discharge end, a driven transverse distributor shaft at the discharge end supporting distributor elements, an endless apron having a span extending along the bed of the body and movable toward the discharge end by a driven transverse shaft, drive means for said shafts comprising a first drive shaft extending along one side of said body between the opposite ends thereof, means at the forward end of said drive shaft connectable to a source of power, a first clutch connecting the rearward end of said first drive shaft with said transverse distributor shaft, a secondary drive shaft parallel to said first drive shaft and extending therealong from the rearward end of

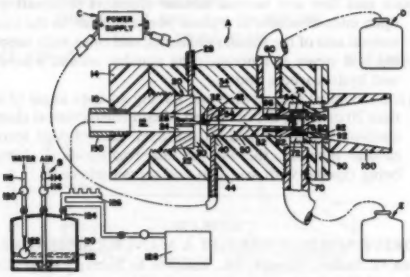
said body a limited distance toward the forward end of the body, gear means connecting said secondary drive shaft to said driven transverse shaft of said apron, spaced similar drive sprockets fixed to said first drive shaft, sprocket gears of different diameters freely rotatable on said secondary drive shaft opposite said drive sprockets and sprocket chains respectively extending therearound, a second clutch member slidable on and rotatable by said secondary drive shaft between said sprocket gears and the opposite ends of said second clutch member respectively being engageable selectively with said sprocket gears respectively to drive said secondary drive shaft at relatively slow and fast speeds and correspondingly move said apron at such speeds, first shift means operable to move said second clutch member between said sprocket gears for selective driving engagement therewith, and supplemental shift means for said first clutch member operable by said first shift means to disengage said distributor shaft to permit independent drive of said apron, the improvement comprising the inclusion of direct drive means between said first drive shaft and secondary drive shaft operable to drive said driven transverse shaft and apron at a speed still greater than said fast speed while said first clutch is disconnected to idle said distributor and effect rapid cleanout of said body by said apron moving at said still greater speed.

4,498,631

ELECTROGASDYNAMIC COATING SYSTEM

Meredith C. Gourdine, East Orange, N.J., assignor to Energy Innovations, Inc., East Orange, N.J.

Division of Ser. No. 310,534, Oct. 13, 1981, Pat. No. 4,433,003.
This application Dec. 6, 1982, Ser. No. 447,478
Int. Cl.³ B05B *5/00*
U.S. Cl. 239—692 **14 Claims**



1. An electrogasdynamic apparatus comprising:

a gas inlet adapted for receiving pressurized gas having a condensable vapor entrained therein;

corona and attractor electrodes disposed in communication with said gas inlet for ionizing said vapor such that ionized vapor passes downstream therefrom:

a dielectric tube having an unobstructed dielectric passage therethrough extending unobstructed downstream from the corona and attractor electrodes to a downstream end;

a first material inlet for receiving a first fluid material, the first material inlet terminating adjacent the dielectric tube downstream end in a first material entraining outlet in communication with a mixing chamber, whereby the first material is prevented from contacting the electrodes; and,

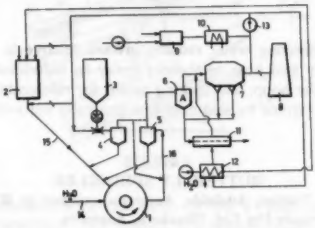
said mixing chamber in communication with, linearly aligned with and disposed downstream from said dielectric tube downstream end said mixing chamber having an unobstructed mixing chamber outlet opening in communication with the atmosphere outside the apparatus at a mixing chamber outlet end and having an unrestricted transverse cross section which is larger than a transverse cross section of the dielectric passage, such that an unobstructed line of sight path without inward projections or obstructions is defined from said electrodes through at least said dielectric passage, said mixing chamber and to the atmosphere outside the apparatus, such that a pressure drop occurs (a) causing first fluid material to be aspirated from the first material entraining outlet, (b) causing turbulence which mixes the first material with said gas entrained with ionized vapor, and (c) causing the ionized vapor to condense on the first material such that said first material becomes charged and is carried from the mixing chamber with the gas.

4,498,632

PROCESS FOR GRIND-DRYING WET SOLID FUEL

Bernhard Riiter, Königsdorf, Fed. Rep. of Germany, assignor to Rheinische Braunkohlenwerke AG, Cologne, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,623
Int. Cl.³ B02C *19/12*
U.S. Cl. 241—18 **7 Claims**



1. A process for grind-drying wet solid fuel of different grain sizes into fine-grained particles, in a fan-type mill and in the presence of a stream of hot drying gas with a low oxygen content supplied to the mill, comprising the steps of:

separating off particles of the fuel which are already substantially of fine-grained size, grains of fuel in the remaining portion of the fuel requiring grinding;

selectively introducing grains of fuel in the remaining portion of the fuel into the stream of the drying gas upstream from the mill in dependence on the grain size of the fuel in such a way that the residence time of the fuel grains in the stream of drying gas decreases with decreasing grain size; and,

grinding the remaining portion of the fuel in the mill, whereby loss of volatile constituents from the fuel during the grind-drying is substantially reduced.

4,498,633

APPARATUS FOR PROCESSING COAL

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

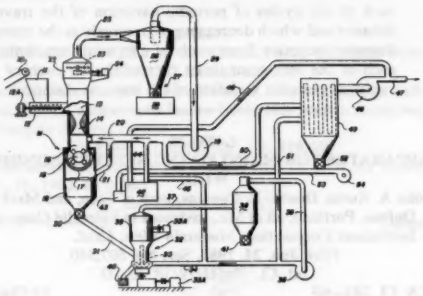
Filed Nov. 4, 1982, Ser. No. 439,050
Int. Cl.³ B02C *23/24*
U.S. Cl. 241—48 **7 Claims**

1. An apparatus for processing coal to extract pyrites which are present in coal, the combination which comprises:

(a) a first coal and air moving circuit containing an impact mill for reducing coal and pyrites into fractions consisting of fines, principal coal and mixed coal and pyrites, a particle size control separator, a centrifugal separator, and blower means connected in series, said blower means creating the movement of air in said first circuit for transporting the fractions of coal fines initially present in the coal and created by the reduction of the coal by said impact mill into principal coal fractions and mixed coal and pyrites; and

(b) a second coal and air moving circuit connected to said first circuit adjacent said impact mill to receive the mixed coal and pyrite fractions reduced by said impact mill, said

second circuit containing air induced specific gravity separator means, a second centrifugal separator and second blower means connected in series, said specific gravity separator means being operable to agitate the mixed coal and pyrite fraction from said impact mill, and said specific gravity separator having an outlet for further



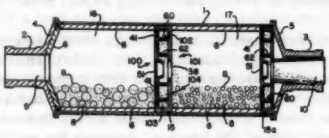
separating pyrites from the mixed coal and pyrites and said second blower means effecting the movement of coal fractions and air in said second circuit to said second centrifugal separator, whereby said specific gravity separator effects the separation of heavy pyrite fractions out of the coal fractions through said outlet.

4,498,634

DIVISION HEAD FOR GRINDING MILL

Jeffrey A. Nelson, Bethlehem, and Kenneth W. Hanstine, Walnutport, both of Pa., assignors to Fuller Company, Bethlehem, Pa.

Filed Sep. 1, 1983, Ser. No. 528,677
Int. Cl.³ B02C *17/06*
U.S. Cl. 241—72 **11 Claims**



1. In a tubular grinding mill having a shell supported at its ends for rotation about its own axis, an inlet for coarse material to be ground, an outlet for fine ground material, and grinding media such as grinding balls within the shell for comminuting material, a division head for dividing the mill into a first compartment and a second compartment, permitting the flow of material being ground from the first compartment to the second compartment, while substantially preventing the flow of grinding media between the first and second compartments and controlling the level of material within the first compartment comprising:

means defining a rim member adapted to be secured to the inside of the shell;

a plurality of hollow pie shaped contiguous panel members secured to each other and to said rim member to form a hollow annular member having a center cone and each panel member having one side facing the first compartment and another side facing the second compartment;

a plurality of grates having openings therethrough, each mounted on one side of the panel members for permitting material in the first compartment to flow into the annular member;

a plurality of solid liners, each mounted on the other side of the panel members for preventing direct communication between the hollow annular member and the second compartment;

at least some of said pie shaped members having an internal partition dividing the pie shaped member into radially inward and radially outward sections;

said radially inward section being flow connected to the center cone so that material in the first compartment can flow through the grates into the radially inward section and from the radially inward section through the center cone to the second compartment;

at least some of said pie shaped panel members having an opening in its internal partition so that when the mill rotates, material in the radially outward sections above the mill axis will flow into the radially inward section, and the remaining pie shaped members having solid partitions; and

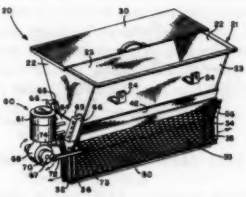
a plurality of valve means each operative associated with one of the openings in said internal partitions for controlling the flow of material from the radially outward section to the radially inward section.

4,498,635

MATERIAL DISPENSING MACHINE

Randy L. Fielding, Fremont, Ohio, assignor to Christy Machine Company, Fremont, Ohio

Filed Nov. 18, 1982, Ser. No. 442,599
Int. Cl.³ B02C *17/02*
U.S. Cl. 241—94 **29 Claims**



17. A material dispensing machine comprising a chute for receiving material to be dispensed, said chute having horizontally spaced downwardly converging upper side portions terminating at closely spaced vertical bottom side portions forming a narrow depending channel, grid means forming at least one of said upper and bottom side portions of said chute, and means for horizontally reciprocating said grid means to effect refinement of material passing downwardly through said chute.

4,498,636

STATOR WINDING APPARATUS AND METHOD

Chester C. Boesewetter, Radford; Lawrence W. Langley, Christiansburg, and John H. Mabie, Radford, all of Va., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Feb. 25, 1982, Ser. No. 352,349
Int. Cl.³ B65H *54/10*
U.S. Cl. 242—1.1 R **12 Claims**

1. A winding machine for a stator with inwardly facing slots comprising:

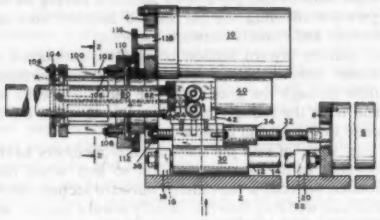
means for holding said stator;

a cylindrical winding member, closely fitted to the inside circumference of said stator and extending beyond the ends of said stator at all times during the winding process, to prevent wire from escaping from the inwardly facing slots of the stator, and having a wire-dispensing aperture on its outside diameter;

wire-dispensing means for pushing wire through the aperture;

reciprocation means for producing longitudinal relative

motion between said cylindrical winding member and said stator; and



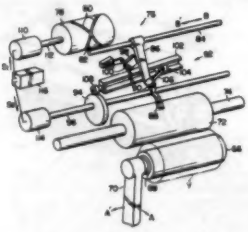
rotation means for producing rotary relative motion between said cylindrical winding member and said stator.

4,498,637

METHOD OF WINDING YARN ON BOBBIN

Shigeru Yamamoto; Yuzuru Miyake, and Isao Nohara, all of Matsuyama, Japan, assignors to Teijin Seiki Company, Limited, Osaka, Japan

Filed Jul. 19, 1982, Ser. No. 399,808
Claims priority, application Japan, Jul. 22, 1981, 56-114887
Int. Cl.³ B65H *54/32, 54/38*
U.S. Cl. 242—18.1 **35 Claims**



1. In a yarn take-up device having a plurality of successive traverse cycles in each of which a continuous yarn is to be helically wound on a rotating bobbin and traversed first in one direction and thereafter in the opposite direction substantially parallel with the axis of rotation of the bobbin, a method of winding the yarn on the bobbin, comprising

producing first signals effective to control the traverse velocity of the yarn to vary between predetermined minimum and maximum limits within a predetermined range and second signals effective to control the traverse distance of the yarn to vary between predetermined maximum and minimum limits within a predetermined range,

at least during a limited time interval, controlling the traverse velocity to periodically vary between the predetermined minimum and maximum limits thereof on the basis of said first signals and controlling the traverse distance to periodically vary between the predetermined maximum and minimum limits thereof on the basis of said second signals,

the cycles of periodic variation of the traverse velocity being respectively identical and synchronized with the cycles of periodic variation of the traverse distance,

each of the traverse velocity and the traverse distance being controlled to vary throughout all of the traverse cycles,

each of the minimum limits of the traverse velocity and each of the maximum limits of the traverse distance occurring substantially at the beginning of each of the cycles of periodic variation of the traverse velocity and traverse distance and each of the maximum limits of the traverse velocity and each of the minimum limits of the traverse distance occurring substantially simultaneously during each of the cycles of periodic variation of the traverse velocity and traverse distance,

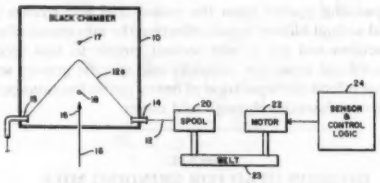
wherein the traverse distance of the yarn is controlled to periodically vary at a rate which increases progressively as the traverse distance decreases from each of the maximum limits to each of the minimum limits thereof during each of the cycles of periodic variation of the traverse distance and which decreases progressively as the traverse distance increases from each of the minimum limits to each of the maximum limits thereof during each of the cycles of periodic variation of the traverse distance.

4,498,638

APPARATUS FOR MAINTAINING RESERVE BONDING WIRE

John A. Kurtz; Donald E. Cousens, both of Saco, and Mark D. Dufour, Portland, all of Me., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Jun. 24, 1983, Ser. No. 507,340
Int. Cl.³ B65H *59/38, 63/00*
U.S. Cl. 242—45 **19 Claims**



1. Apparatus for maintaining lead wire between a spool and a wire bonding tool comprising:

spool mounting means for mounting the spool for rotation about the spool axis;

spool drive means operatively coupled to the spool mounting means for driving and rotating a spool about the spool axis;

slack chamber means for maintaining a reserve length of lead wire in untangled condition, said slack chamber means comprising a housing enclosure, inlet guide means on one side thereof for guiding lead wire into the slack chamber means from a spool, outlet guide means formed on the opposite side of the housing enclosure for guiding lead wire out of the slack chamber means towards the wire bonding tool, and wire sensing means operatively positioned for sensing the offset of lead wire passing through the slack chamber means from the inlet guide to the outlet guide and for generating corresponding signals;

means for directing a gaseous flow into the slack chamber means between the inlet and outlet guides in the direction of the wire sensing means whereby a length of lead wire passing through the slack chamber means between the inlet guide and outlet guide is maintained and suspended in the gaseous flow in a configuration offset from an imaginary line between the inlet and outlet guides thereby maintaining a slack reserve length of lead wire under slight tension for delivery in untangled condition to the bonding tool;

and wire feed control means operatively coupled to receive siganls from said wire sensing means for controlling the delivery and feeding of lead wire by the spool drive means from a spool on the spool mounting means into the slack chamber means in response to said signals for maintianing the slack reserve length of lead wire in the slack chamber means within a predetermined range;

said spool mounting means further comprising axial drive means for translating said spool in an axial direction to maintain the angle of entry of lead wire from the spool

into the inlet guide of the slack chamber means within a desired angular range.

4,498,639

WEFT PREDELIVERY AND MEASURING DEVICE FOR A SHUTTLELESS LOOM

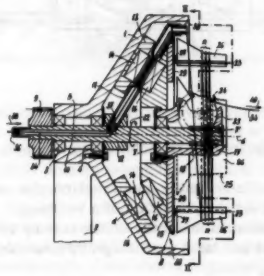
Albert H. Deborde, and Pierre Rémond, both of Bourgoin Jailleu, France, assignors to Saurer-Diederichs Societe Anonyme, Bourgoin Jailleu, France

Filed Sep. 17, 1982, Ser. No. 419,468

Claims priority, application France, Oct. 13, 1981, 81 19628; Mar. 31, 1982, 82 05893

Int. Cl.³ B65H *51/20*

U.S. Cl. 242—47.01 **7 Claims**



1. A weft predelivery and measuring device for a shuttleless loom, comprising:

a tubular member rotatable about an axis and integral with a rotary shaft which is traversed by an axial channel along which a weft yarn can pass into the tubular member;

a drum fixed with respect to said axis and defined by a plurality of radially adjustable members orbited by an end of said tubular member to allow said weft to be wound on said drum;

a worm on said shaft within said drum;

a worm gear within said drum meshing with said worm;

a second shaft connected to said worm gear and driven by the first mentioned shaft through said worm and said worm gear with a speed bearing a fixed ratio ot the speed of said first shaft determined by a transmission ratio of said worm and said worm gear;

a claw wheel on said second shaft provided with a plurality of angularly equispaced claws each having a concave face permitting retention of weft yarn until the respective claw is rotated with rotation of said claw wheel, said claw wheel being disposed relative to said radially adjustable members of said drum to enable each claw to retain successive turns of weft yarn deposited on said drum and then upon such rotation to release the turns retained by each claw and deposited on said drum all at once, said radially adjustable members being angularly equispaced adjustable weft supports, said drum further comprising a disk, and means angularly equispaced around said disk for receiving the respective weft supports and enabling the radial and concentric adjustment with respect to the axis of said first shaft, said second shaft being radially aligned with said one of said supports; and

means for radially adjusting a position of said wheel with respect to said worm gear in accordance with the position of said one of said supports.

4,498,640

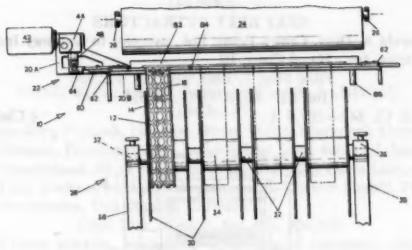
APPARATUS AND METHOD FOR UNIFORMLY WINDING ELONGATE SHEET MATERIALS

Frank J. Nowak, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 5, 1982, Ser. No. 375,155

Int. Cl.³ B65H *17/02, 19/04, 57/28*

U.S. Cl. 242—67.1 R **12 Claims**



1. An apparatus for facilitating uniform winding of sheet material comprising, in combination a shuttle member having at least one material receiving channel disposed therein, said channel having a width substantially equal to the width of said sheet material, a retaining member extending across said channel, said retaining member disposed for movement between a first position in which said material is retained in said channel and a second position in which said retaining member is spaced from said shuttle member, means for moving said retaining member between first and second positions drive means for reciprocating said shuttle member, and coupling means for interconnecting said drive means and said shuttle member.

4,498,641

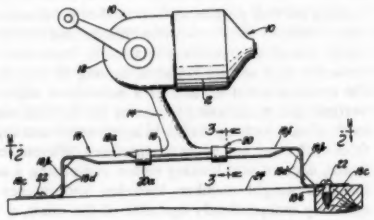
MOUNTING BRACKET ASSEMBLY FOR FISHING REELS

Ernst W. Steudle, Fraser, Mich., assignor to U.S. Properties Inc., Fraser, Mich.

Filed Mar. 19, 1984, Ser. No. 590,834

Int. Cl.³ B65H *17/52;* A47H *1/00;* B65D *85/00;* A63B *55/00;* A01K *27/06*

U.S. Cl. 242—106 **10 Claims**



1. A mounting bracket assembly for storing fishing reels of the type having a pedestal portion terminating in a foot portion of arcuate cross section, said assembly comprising:

A. a bracket having

1. an elongated main body portion defining an elongated arcuate seating surface having a radius of curvature generally corresponding to that of the foot portion of a fishing reel to be stored,

2. leg portions extending from each end of said main body portion in a direction toward the center of curvature of said seating surface, and

3. mounting means on the free ends of said leg portions for coaction with fastener elements to mount said bracket

on a suitable support surface with said main body portion spaced from the support surface; and

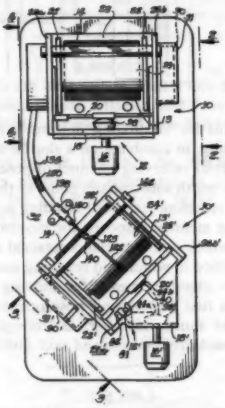
B. a pair of retainer clips slidably mounted on said main body portion and dimensioned and configured to slide snugly over the opposite ends of a fishing reel foot portion seated on said seating surface to firmly secure the foot portion and thereby the fishing reel to the bracket.

4,498,642

SEAT BELT RETRACTORS

Gerald A. Doty, Crown Point, Ind., assignor to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Mar. 7, 1983, Ser. No. 472,634
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **4 Claims**



1. A safety belt retractor system comprising:

a first retractor and a second retractor, each of said retractors having its own separate and discrete frame having opposed sides, a reel in each retractor supported for rotation between said sides, a belt portion wound around said reel for protraction from and retraction onto said reel, spring means biasing the reel to retract and rewind the belt portion onto the reel, locking means in each retractor for locking the belt portion against further protraction at the time of sudden vehicle velocity change, said first retractor being spaced at a substantial distance from said second retractor, said second retractor having its reel mounted for rotation about an axis at a substantial angle to the vertical and to the axis of rotation for the first retractor, each of said locking means being discreet and separated from each other and being mounted in a different retractor frame, each of said locking means comprising a separate movable weight member, lock bar and ratchet wheel assembly independently operable of the other, a tension relieving means mounted coaxially with the axis of rotation of the first retractor and associated with said first retractor for relieving spring means tension from the belt portion of said first retractor when worn about a passenger; said tension relieving means allowing the passenger to move forward and backward without releasing,

means for releasing said tension relieving means to permit retraction of the belt portion associated with said first retractor; and

cable means extending in a nonlinear path between said first and second retractors for actuating said releasing means upon retraction of the belt associated with said second retractor; and

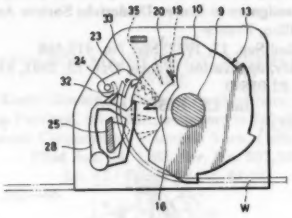
guide means guiding the cable for movement along said nonlinear path.

4,498,643

AUTOMATIC LOCKING RETRACTOR

Katsuyasu Ono, Fujisawa, Japan, assignor to NSK-Warner K.K., Japan

Filed Nov. 10, 1983, Ser. No. 550,578
Claims priority, application Japan, Nov. 17, 1982, 57-173900[U]
Int. Cl.³ A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107.4 D **6 Claims**



1. An automatic locking retractor comprising:

a casing;

a take-up spindle rotatably supported on the casing and urged in the winding direction of a webbing;

a cog wheel mounted integrally on the take-up spindle;

a ratchet wheel and latch gear integrally rotatable together with the cog wheel;

a lock lever displaceable between a first position where the lock lever is in engagement with the cog wheel and a second position where the lock lever permits free rotation of the cog wheel;

a pawl displaceable between an engagement position where the pawl is in engagement with the ratchet wheel, an intermediate position where the pawl is engageable with the ratchet wheel and a non-engagement position where the pawl is kept out of engagement with the ratchet wheel;

a control member normally biased to a position, where the control member is engageable with the latch gear, and capable of assuming a first working position where the control member is brought into contact with the path of rotation of the circumference of the latch gear by a rotation of the take-up spindle in the pulling-out direction of the webbing and a second working position where the control member is brought into contact with the path of rotation of the circumference of the latch gear by a rotation of the take-up spindle in the winding direction of the webbing; and

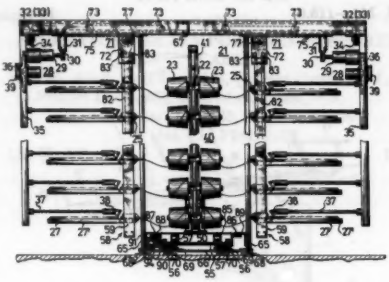
sensor means coupled with the pawl and adapted to hold the pawl in the non-engagement position when the webbing has been wound up over at least a predetermined length;

wherein the control member moves toward the first working position and is brought into engagement with the pawl and the pawl assumes the non-engagement position when the webbing which has been wound up on the take-up spindle is pulled out, the control member moves toward the second working position and is disengaged from the pawl and the pawl moves to the intermediate position when the webbing has been wound back over a predetermined small length, and the pawl is then guided to the engagement position when the webbing is pulled out again; and means for displacing the lock lever from the second position to the first position as the pawl is displaced from the intermediate position to the engagement position.

4,498,644
CREEL

Wilhelm Küpper, Wegberg, and Gerhard Koslowski, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 442,899
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146170
Int. Cl.³ D02H *1/00*; B65H *49/02*
U.S. Cl. 242—131.1 5 Claims

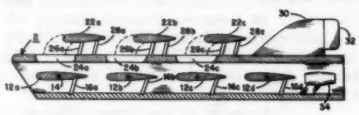


1. Creel, comprising a stationary supporting frame, at least one yarn tensioning holding element and at least one thread guiding element supported by said stationary supporting frame, bobbin holding assemblies disposed in vicinity of said stationary supporting frame, a plurality of bobbin holding elements carried on each of said bobbin holding assemblies, drive rollers connected to said bobbin holder assemblies for supporting said assemblies on a floor, separate hood-shaped sliding frames, each of said sliding frames being connected to a respective one of said assemblies, and separate upper cover plates each being disposed on a respective one of said sliding frames covering said drive rollers and part of the floor for preventing accidents and dust accumulation.

4,498,645
WINGLESS AIRCRAFT WITH DUCTED VARIABLE PITCH AIRFOILS

Arthur L. Hardy, Lowell Rd., Windham, N.H. 03087

Filed Oct. 28, 1982, Ser. No. 437,215
Int. Cl.³ B64C *3/10*
U.S. Cl. 244—12.6 1 Claim

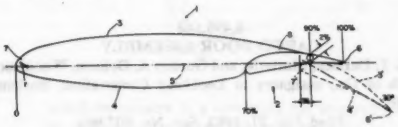


1. A wingless aircraft comprising
a fuselage,
a power channel integrally secured to said fuselage having front and rear openings and first and second parallel horizontal linear ducts extending the length of said power channel,
a first plurality of movable airfoils positioned in spaced relationship within and along said first duct,
a second plurality of movable airfoils positioned in spaced relationship within and along said second duct,
first and second drive engines positioned respectively within said ducts,
control means for adjusting the pitch of each of said airfoils, the pitch of said second plurality of airfoils being adjustable independently from those of said first set of airfoils,
said power channel having a plurality of top openings each positioned above one of said airfoils,
a plurality of auxiliary wing panels each positioned in and substantially sealing one of said openings,
pivot means for raising each of said auxiliary wing panels from its associated opening to a position above and at least partially laterally offset from its said associated opening, and
means for controlling the pitch of said auxiliary wing panels.

4,498,646
WING FOR SHORT TAKE-OFF AND LANDING AIRCRAFT

Hans-Jörg Proksch, Hagnau; Dieter Welte, Markdorf; Herbert Zimmer, Friedrichshafen, and Michael Lotz, deceased, late of Immenstaad, all of Fed. Rep. of Germany (by Carla Lotz, née Post, Andreas Lotz, heirs), assignors to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,418
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1981, 3125916
Int. Cl.³ B64C *3/26*
U.S. Cl. 244—35 R 2 Claims



1. A profile shape for wings of short take-off and landing aircraft, for cruising speeds up to about 700 km/h, which comprises a profile having a center line in combination with a nose radius to achieve the maximum possible lift as well as the least possible trimming drag for take-off or cruising, where the center line (S) includes a first forward point (b_1) at about $x/l=0.15$ with a first camber maximum of about 1.54% of the length (l), a rear point (b_2) at about $x/l=0.7$ with a second camber maximum which is about 1.94% of the length (l), a point (b_3) located between the points (b_1 and b_2) and at about $x/l=0.4$ representing a camber minimum of about 1.4% of the length (l), and where a profile droplet is superposed on the center line (S) and evinces a thickness distribution D having a forward point of about $y_D/l=0.059$ at about $x/l=0.15$, by a point $y_D/l=0.08$ at about $x/l=0.42$, a point of about $y_D/l=0.052$ at about $x/l=0.7$, and by a rear point of about $y_D/l=0.007$ at about $x/l=1.0$, and said profile also having a nose radius (r) of about $r/l=0.0145$.

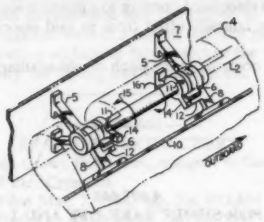
4,498,647
SURFACE HOLD-DOWN MECHANISM

Wilfred E. Boehringer, Fullerton, and Vincent J. Pastor, El Toro, both of Calif., assignors to McDonnel Douglas Corporation, Long Beach, Calif.

Filed Mar. 15, 1982, Ser. No. 358,320
Int. Cl.³ B64C *9/02*
U.S. Cl. 244—75 R 6 Claims

5. In an airfoil having a hinged, driven control surface, a control surface hold-down mechanism comprising:
a torsion bar anchored to said airfoil remote from said hinge axis of said control surface;
two 4-bar linkage means attached to said torsion bar so as to

pre-load said torsion bar to provide a biasing force to maintain said control surface in the neutral position; and



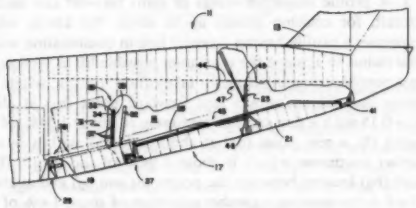
means to drive said two 4-bar linkage means so that said biasing force always increases with either clockwise or counterclockwise rotation of said control surface.

4,498,648

CARGO DOOR ASSEMBLY

Frank T. DeLuca, Marietta, and Gordon A. Dobson, Woodstock, both of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed Jun. 27, 1983, Ser. No. 507,964
Int. Cl.³ B64D *9/00*; B64C *1/22*
U.S. Cl. 244—118.3 **12 Claims**



1. A plug-type door assembly for the storage compartment of a cargo aircraft having a fuselage comprising:

(a) a cargo ramp pivotally mounted for longitudinal as well as outward and downward rotation from a closed position to first, second, and third positions;

(b) ramp actuator means for lowering and raising said cargo ramp;

(c) ramp locking means for locking said ramp in the closed position;

(d) a ramp extension selectively affixed to said ramp;

(e) a ramp extension locking means for selectively locking said extension to said ramp;

(f) a cargo door pivotally mounted for inward and upward rotation from a closed to an open position;

(g) door locking means for locking said door in the closed position;

(h) a hinged pressure bulkhead, one end being attached to torque deck of the storage compartment, the other end being slidably affixed to said door;

(i) bulkhead actuator means for folding and opening said bulkhead to lift and lower said cargo door; and

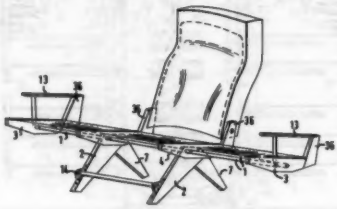
(j) sealing means for forming a pressure tight seal at ramp, door, pressure bulkhead and fuselage intersections.

4,498,649

AIRCRAFT SEATING

Ian C. Toll, Hamworthy, England, assignor to Futaire Limited, Poole, England

PCT No. PCT/GB82/00096, § 371 Date Nov. 23, 1982, § 102(e) Date Nov. 23, 1982, PCT Pub. No. WO82/03366, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 30, 1982, Ser. No. 449,001
Claims priority, application United Kingdom, Mar. 30, 1981, 8109903
Int. Cl.³ B64D *11/06*
U.S. Cl. 244—118.6 **19 Claims**



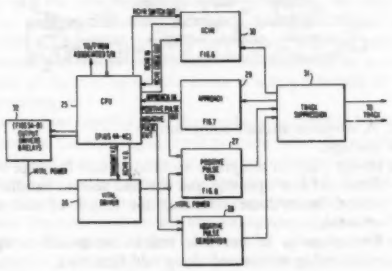
1. A seat frame assembly for an aircraft or like seat comprising a leg terminating at its lower end in a mechanical anchor for location in a floor fixing track, at least one laterally extending spar means fastened to the leg and at least two seat support members fastened to the spar, the seat support members, leg and spar having load bearing shells of fibre reinforced plastic defined by inner layers of carbon fibre disposed in an anisotropic like structure and an outer layer of aramid fibres so that loads on the seat frame members are transmitted through the spar means to the leg and the assembly acts as an integral structure.

4,498,650

MICROPROCESSOR BASED TRACK CIRCUIT FOR OCCUPANCY DETECTION AND BIDIRECTIONAL CODE COMMUNICATION

Barry L. Smith; James R. Hoelscher, and William A. Petit, all of Rochester, N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Mar. 10, 1982, Ser. No. 356,861
Int. Cl.³ B61L *25/00, 21/00*
U.S. Cl. 246—122 R **23 Claims**



1. A railroad track circuit comprising a transmitter and a receiver spaced apart along a section of railroad track,

in which said transmitter comprises:

a source of electrical energy and means coupling said source of electrical energy to said section of railroad track,

and in which said receiver comprises:

microprocessor means with at least one input port and at

least one output port for producing signals at said output port in response to signals at said input port, means connecting said input port to said section of track at a location spaced from said means coupling said source of electrical energy, output means for driving an indication device coupled to said output port,

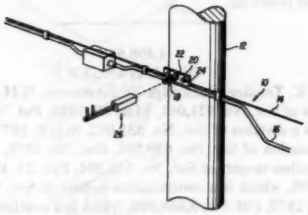
whereby said output means is capable of controlling an indication device to indicate the occupancy condition of said section of track between said transmitter and said receiver.

4,498,651

APPARATUS FOR TEMPORARILY SUPPORTING A CABLE

Frank W. Allen, Wall Township, Bellmar County, N.J., assignor to Project Packaging, Inc., Manasquam, N.J.

Filed Mar. 15, 1983, Ser. No. 475,697
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—65 **12 Claims**



1. A pole line comprising:

(a) a plurality of poles;

(b) a plurality of cable hanging apparatus one of which is mounted on each of said plurality of poles in position to receive and support a cable system, each of said plurality of cable hanging apparatuses comprising a tie bolt which extends through the corresponding one of said poles and a cable clamp threadedly received on said tie bolt, said tie bolt having a threaded end which extends through said cable clamp and which protrudes beyond said cable clamp;

(c) a replacement cable system received in and supported by said plurality of cable hanging apparatuses; and

(d) a plurality of apparatuses for temporarily supporting a cable which is being removed from said pole line while said replacement cable is being strung on said pole line in the position formerly occupied by the cable being replaced, each of said apparatuses comprising:

(i) a first member extending linearly along an axis and containing a threaded bore which receives and is threadedly secured to the projecting end of the corresponding one of said tie bolts;

(ii) two cable receiving members projecting from sid first member perpendicularly to the axis of said first member, said two cable receiving members being spaced apart by a distance slightly greater than the diameter of the cable being replaced; and

(iii) cable retaining means for securely holding the cable being replaced between said two cable receiving members in position to be supported by said first members.

4,498,652

WIRE RACK FOR PLASTIC BAG

James J. Malik, 6618 Bennington Dr., Parma Heights, Ohio 44130

Filed Jul. 29, 1983, Ser. No. 518,550
Int. Cl.³ B65B *67/04*
U.S. Cl. 248—99 **4 Claims**

1. A wire rack for mounting to the inner surface of a door of a cabinet so as to be able to open and close the door with a plastic bag suspended open-mouthed by its handle loops removably secured on the rack, said rack comprising,

a generally trapezoidal device including in combination,

(a) a main wire member for supporting said plastic bag in the open-mouthed position for receiving material, and

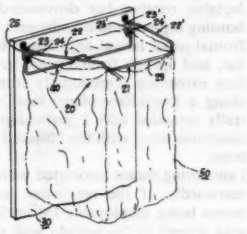
(b) a wire bail upon which a package of plastic bags is removably secured, the bail forming the base of a trapezoid,

said main member comprising,

(i) a pair of side members angulated in the horizontal plane to include an obtuse angle so that the side members converge symmetrically into

(ii) a front longitudinal member stepped down from the horizontal plane of the side members by downwardly extending portions inclined inwardly from the vertical, said side members being provided near their ends with

(iii) U-shaped portions, each of which has one vertical arm



which terminates in a mounting ear integrally formed by deforming an end of said main member to provide parallel faces, said mounting ear having a through-aperture for mounting said main member to said door's inner surface,

whereby said side members form tab-shaped protrusions upon which said handle loops are secured; and,

said wire bail comprising,

(i) a longitudinal member terminating in oppositely disposed vertical side members having integral end-loops through each of which one said mounting ear is inserted so the bail is swingably disposed in the trough of each said U-shaped portion, and,

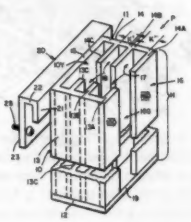
(iii) an inverted-U-shaped portion formed integrally in said bail, at the center thereof, to provide a vertical protrusion upon which a package of plastic bags may be stored.

4,498,653

ADAPTER FOR RECEIVING MULTI-HOOKS BRACKETS OF VARIOUS MODEL-DESIGNS

Thomas A. Quest, 9205 Timberline Dr., Omaha, Nebr. 68152

Filed May 31, 1983, Ser. No. 499,289
Int. Cl.³ E04G *5/06*; A47G *29/02*
U.S. Cl. 248—225.2 **11 Claims**



1. Adapter for engageably receiving multi-hooks brackets of various model-designs and being anchorable to a suitable wall

environment whereby the bracket engaged multi-hooks bracket might suspendably support office equipment relative to said environmental wall, said wall anchorable adapter comprising:

(A) an upright tubular housing having a finite-height between a top-end and a bottom-end and comprising four interconnected upright-panels including laterally separated rear-panel and frontal-panel and transversely separated leftside-panel and rightside-panel, the housing bottom-end being closed by a base-plate, said four upright-panels providing a vertical-bore of regular non-circular cross-sectional shape for said tubular housing and which shape includes laterally consecutive channels commencing at the frontal-panel, respective housing member channels being cross-sectionally defined by a pair of transversely separated bifurcate housing wings emanating from the leftside-panel and the rightside-panel, each of said housing channels being adapted to slidably receive a selectable receiver-bar downwardly insertable from the housing top-end and thereby providing with respect to the frontal-panel lateral adjustment means for said receiver-bar, said upright frontal-panel having an upright frontal-face extending directionally transversely and uprightly along a frontalface-plane, said frontal-panel being centrally provided with a vertical-groove therethrough and communicating with the channels of the housing vertical-bore;

(B) anchoring means associated with and extending laterally rearwardly of the rear-panel member, said anchoring means being employable for anchoring the frontal-panel with respect to the upright wall environment; and

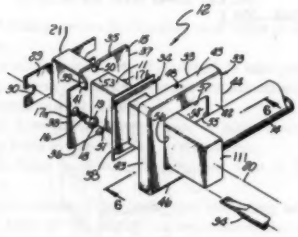
(C) a said receiver-bar having a uniform lateral-extent thickness therealong and provided with at least a vertical first-row and a vertical second-row of laterally horizontal apertures therethrough, said first-row apertures being at a regular vertical-spacing of a first-spacing value, and each of said first-row apertures having a substantially constant aperture-height, said second-row apertures being at a regular vertical-spacing of a second-spacing value differing from said first-spacing value, and each of said second-row apertures having a substantially constant aperture-height differing from the aperture-height for the first-row, whereby upon inversion of the selected receiver-bar within a housing channel, either the first-row or the second-row apertures might be made in lateral registry with said frontal-panel vertical-groove for engagement by the bracket hooks.

4,498,654

SUPPORT FOR BATHROOM FIXTURE OR THE LIKE

Leo Cooper, Los Angeles, Calif., assignor to Tubular Specialties Mfg., Inc., Los Angeles, Calif.

Filed Jun. 3, 1982, Ser. No. 384,548
Int. Cl.³ A47H 1/14
U.S. Cl. 248—251 **20 Claims**



1. A fixture comprising:

a mounting plate adapted to be attached by fastener means to a supporting wall;

a post supported by said mounting plate and projecting outwardly therefrom in a predetermined direction away from said wall and which is of non-circular external cross-section transversely of said direction;

a cover plate disposed about said non-circular post outwardly of said mounting plate and having an inner edge defining an opening through which said non-circular post extends;

said opening being larger than said post to fit loosely thereabout in a relation permitting movement of the cover plate transversely of the post and relative to the post and mounting plate, during attachment of the fixture to a wall, and between a first position of the cover plate allowing access to said fastener means by a tool and a second position covering the fastener means; and

a part disposed about said post and adapted to bridge across the space between said post and said inner edge of the cover plate and which contains a non-circular opening fitting closely about said non-circular post;

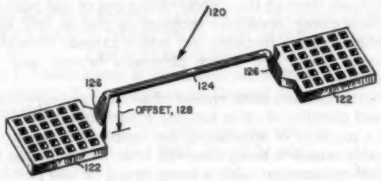
said cover plate being movable relative to said part transversely of the post in moving between said first and second positions.

4,498,655

WALL HANGER

Robert K. Tendler, Buckridge Dr., Amherst, N.H. 03031

Division of Ser. No. 921,041, Mar. 30, 1978, Pat. No. 4,309,016, which is a division of Ser. No. 831,092, Sep. 6, 1977, which is a continuation of Ser. No. 639,594, Dec. 10, 1975, which is a continuation-in-part of Ser. No. 446,394, Feb. 27, 1974, Pat. No. 3,926,399, which is a continuation-in-part of Ser. No. 400,662, Sep. 25, 1973, Pat. No. 3,868,086, which is a continuation-in-part of Ser. No. 235,174, Mar. 16, 1972, Pat. No. 3,788,588. This application Aug. 10, 1981, Ser. No. 291,491
The portion of the term of this patent subsequent to Dec. 16, 1992, has been disclaimed.
Int. Cl.³ A47F 7/14
U.S. Cl. 248—467 **9 Claims**



1. Apparatus for hanging articles on a wall which has a member protruding therefrom and from which said articles are hung, comprising:

a wall hanging, and

a unitary picture hanger of resinous material including two flat, separated pad portions lying substantially in one plane; an integral, flexible wire-like strand member depending between said pad portions, said flexible wire-like strand being formed by stretching; and integral riser means at each end of said flexible member for attaching said flexible member to said pad portions and for offsetting said flexible member from the plane in which said pad portions lie by a distance sufficient for said protruding member to engage said strand member when said wall hanging is hung on said wall, said picture hanger being affixed to the back of said wall hanging such that said separated pad portions contact the back of said wall hanging, and such that said strand member runs horizontally, said wall hanging being aligned with said wall by changing the point of engagement between said protruding member and said strand member, whereby a stable mounting system is provided with centering and balancing a

function of the length of said strand member and the point of engagement between said strand member and said protruding member.

4,498,656

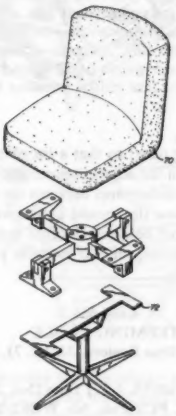
UNIVERSAL MECHANICAL LINKAGE

Tor Arild, 76 Morse La., Woodside, Calif. 94062

Continuation of Ser. No. 207,132, Nov. 17, 1980, abandoned. This application Jan. 28, 1983, Ser. No. 461,945

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—608 **11 Claims**



1. A torsioned linkage element for interconnecting and supporting a first movable body with respect to a second movable body, said element comprising:

first and second lineal bars, said bars being substantially coplanar and intersecting one another at a central location with the opposed free ends of said first bar being connectable to said first movable body and with the opposed free ends of said second bar being connectable to said second movable body;

first means for rigidly connecting at least one free end of said first bar to said first movable body;

second means for rigidly connecting at least one free end of said second bar to said second movable body; and

clamping means for securely fastening said bars at said central location, said bars being configured such that said linkage element is capable of motion in three axes whereby said linkage element provides support and torsionally restrained relative motion between said bodies in all axes.

4,498,657

SIGN STANDARD FOR SUPPORTING AND DISPLAYING A SIGN

William A. Werner, 6338 Woodlawn Dr., NE., Salem, Oreg. 97303, assignor to William A. Werner, Oreg.

Continuation of Ser. No. 120,677, Feb. 11, 1980, , which is a continuation-in-part of Ser. No. 950,466, Oct. 11, 1978,. This application Jun. 21, 1982, Ser. No. 390,550

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—623 **6 Claims**

1. A windproof sign stand, comprising:

a base;

a first post connected to the base and having an end extending therefrom;

spring means connected to said end of the first post extending away from the base;

means for adjusting the distance between the spring means and the base;

a second post connected to the spring means such that the spring means is between the first and second post;

a third post mounted to the second post to have a range of slidably adjustable, reciprocal telescoping motion therewithin;

a first sign mounting flange connected to the second post for securing a first portion of a sign thereto; and

a second sign mounting flange connected to the third post for securing a second portion of a sign thereto, the first and second mounting flanges and the range of motion of the third post within the second post cooperating to permit adjustment of the distance between the first and second sign mounting flanges, the spring means, said spring means, adjusting means and the first, second and third posts cooperating to support the sign at a predetermined distance from the base such that the sign tilts in response to wind forces thereon, thereby limiting tilting moments about the base resulting from wind forces on the sign.

4,498,658

PIPE COUPLER ARRANGEMENT

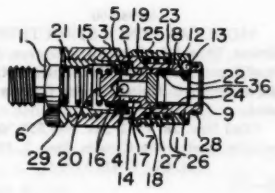
Toshio Mikiya, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,381

Claims priority, application Japan, Sep. 7, 1981, 56-139820

Int. Cl.³ F16L *37/28*

U.S. Cl. 251—149.6 **8 Claims**



1. A pipe coupler arrangement including a socket having therein a valve member provided with fluid passage means and a plug provided at one end face with means engageable with said valve member, and a locking ball being provided in the outer periphery of said socket and being engageable within, or disengaged from, a groove formed in the outer periphery of said plug, thereby coupling or decoupling said plug into or out of said socket comprising:

said valve member including a blank flange which is nor-

mally in abutting contact with an annular seal disposed in said socket while said plug is separated from said socket, thereby closing up said passage means;

said socket including a separate locking ball-bearing annulus which is not affixed to and is independently slidable toward said valve member by said plug in the course of coupling of said plug with said socket just before disengagement of said flange from said seal;

a single O-ring being disposed between said valve member and said locking ball-bearing annulus, said O-ring being axially compressed into engagement with both the inner surface of said socket and the outer surface of said plug when said locking ball-bearing annulus receives a force exerted by said plug, and said O-ring being not subjected to any axially excessive force to retain its original shape when said locking ball-bearing annulus receives no force from said plug due to the positioning of said O-ring between said valve member and said separate locking ball-bearing annulus.

4,498,659

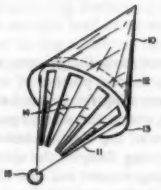
CONICAL LINE-PULLING CARRIER

Pete Brockelsby, III, 880 King Ave., Columbus, Ohio 43212

Continuation-in-part of Ser. No. 354,128, Mar. 2, 1982, abandoned. This application Apr. 11, 1983, Ser. No. 484,063

Int. Cl.³ B66F *3/00*

U.S. Cl. 254—134.4 **6 Claims**



1. A carrier for pulling a messenger line through conduit comprising a single, unitary, lightweight, flexible, plastic cone whose base is approximately the same diameter as the interior of the conduit being traversed, a plurality of flexible strands, each of said strands being attached at one of its ends to, and each of said strands extending inwardly directly from, the interior of said cone only at a location essentially parallel to the base of said cone and spaced between said base and the apex of said cone, said strands being equi-spaced around the interior of said cone, the other end of each of said strands being joined together and attached to means to which a messenger line may be attached.

4,498,660

MODULAR FENCE STRUCTURE

Robert J. Brema, Thornhill; Gerald J. Adamson; Philip L. Poissant, both of Toronto, and John H. Cleminson, Orangeville, all of Canada, assignors to Union Carbide Canada Limited, Toronto, Canada

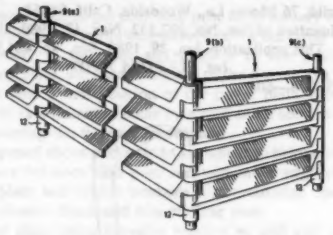
Filed Nov. 28, 1983, Ser. No. 555,766

Claims priority, application Canada, Dec. 2, 1982, 416843

Int. Cl.³ E04H *17/14*

U.S. Cl. 256—19 **3 Claims**

1. A fence comprising a first, a second and a third post aligned in parallel and having at least two modular panels mounted between each of said posts; each said modular panel comprising a rail section, a first connector member at one end of said rail section and a second connector member at the opposite end of said rail section, each of said connector members positioned offset from the longitudinal axis of said panel on opposite sides of said axis from each other and having a central passage for passing a length of one of said posts therethrough and including an expansion joint within said central passage for gripping said post; said rail section including a central louvered portion angled with respect to the connector members and a lip portion extending along the end of said louvered portion; said modular panels being so mounted on said posts that the central louvered portion of one modular panel is angled in opposite direction to the louvered portion of



the adjacent modular panel so that a lip portion of one panel abuts the lip portion of the adjacent panel and the first connector member of the modular panel between the second and third post is positioned below the second connector member of the modular panel mounted between the first and second posts to provide an interconnecting of said modular panels.

4,498,661

TEEMING LADLE

Vladimir E. Kobzar, ulitsa Kosiora, 32, kv. 71, Dnepropetrovsk, U.S.S.R.

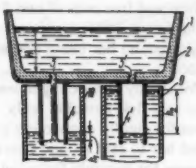
PCT No. PCT/SU82/00015, § 371 Date Dec. 23, 1982, § 102(e) Date Dec. 23, 1982, PCT Pub. No. WO82/03582, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 23, 1982, Ser. No. 459,640

Claims priority, application U.S.S.R., Apr. 23, 1981, 3279495

Int. Cl.³ B22D *39/00*

U.S. Cl. 266—239 **24 Claims**



1. A teeming ladle for use in making molds from a melt comprising a body with a bottom having at least one tapping hole with a gas-impermeable sleeve being arranged around each tapping hole substantially coaxially therewith and having one of its ends tightly connected with the ladle bottom and the other end immersable in the melt during casting, the diameter of said sleeve being substantially larger than that of the tapping hole that after immersing the sleeve in the melt, a space is left in the sleeve interior capable of being filled with a gaseous medium under a pressure ranging from 0.02 to 1.0 times the pressure under which the melt is discharged from the ladle.

4,498,662

ADJUSTABLE PIPE CLAMP HOLDERS

Wilbur C. Halter, 3348 Uniontown Rd., Uniontown, Md. 21157

Filed May 4, 1983, Ser. No. 491,273

Int. Cl.³ B25B *1/00*

U.S. Cl. 269—101 **2 Claims**

1. A holding apparatus for effecting an attachment of an adjustable pipe clamp or the like to a working surface, such as

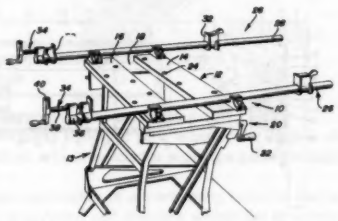
the working surface of a folding workbench or the like, said holding apparatus comprising:

a body portion;

a substantially cylindrical aperture directed through said body portion, said substantially cylindrical aperture being designed to retain said adjustable pipe clamp therein;

interference prevention means, said interference prevention means comprising a through-extending slot cut into said substantially cylindrical opening whereby an internal wall portion of said substantially cylindrical opening is discontinuous, thereby to permit a circumferential surface of said adjustable pipe clamp to extend outwardly from said substantially cylindrical opening and above a topmost portion of said body portion;

clamping means, said clamping means comprising a threaded member selectively movable into and out of said substantially cylindrical opening, said threaded member being selectively brought into engagement with said adjustable pipe clamp retained within said substantially cylindrical



opening, thereby to frictionally engage and retain said adjustable pipe clamp within said opening;

attachment post means, said attachment post means extending out of a bottommost portion of said body portion and being positionable through an opening provided in said working surface, thereby to retain said body portion at a desired location on said working surface, said attachment post means including a substantially smooth surfaced cylindrical portion and a threaded end portion; and

working surface attachment means, said working surface attachment means including a washer means positionable over said threaded end portion of said attachment post means and being engageable with a bottommost surface of said working surface and further including an internally threaded member positionable over said threaded end portion, said internally threaded member being operable to force said washer into engagement with said bottommost surface of said working surface, thereby to frictionally secure said holding apparatus in a particular desired location.

4,498,663

SIGNATURE HANDLING APPARATUS FOR DETECTION OF SHORT SIGNATURE GROUPS

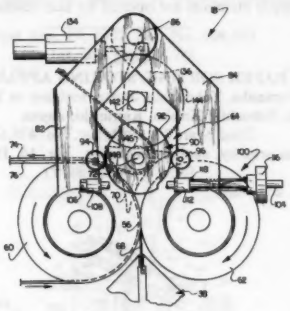
Richard D. Wamsley, Swanton, Vt., and David J. Polman, Brook Park, Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Sep. 23, 1983, Ser. No. 535,034

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—54 **10 Claims**

1. An apparatus comprising conveyor means for transporting signatures, a plurality of feeder means disposed in an array along said conveyor means for feeding signatures onto said conveyor means to form groups of signatures containing a predetermined number of signatures, detector means for detecting a signature misfeed by one of said feeder means and the formation of a defective group of signatures containing less than the predetermined number of signatures, means for forming a nip through which the groups of signatures are sequentially fed, said means for forming a nip including first and second rollers which are disposed on opposite sides of the nip with the centers of rotation of said rollers spaced a first distance apart during the feeding of groups of signatures containing the predetermined number of signatures, and control means



for decreasing the spacing between the centers of rotation of said rollers to feed a defective group of signatures containing less than the predetermined number of signatures in response to said detector means detecting a signature misfeed.

4,498,664

APPARATUS FOR REMOVING FROM A PRODUCT STREAM CONVEYED BY MEANS OF A CONVEYOR DEVICE FLEXIBLE, FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS

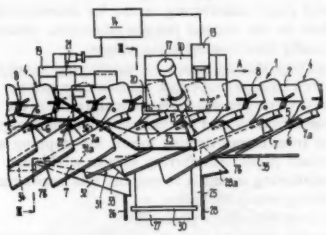
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Mar. 22, 1982, Ser. No. 360,212

Claims priority, application Switzerland, Apr. 9, 1981, 2388/81

Int. Cl.³ B65H *29/04*

U.S. Cl. 271—204 **23 Claims**



1. An apparatus for removing flexible, substantially flat products, especially printed products, from a product conveying stream moving in a predetermined product conveying direction and defining a product conveying path comprising:

a conveyor device;

said conveyor device being provided with gripper elements arranged in spaced relationship from one another at said conveyor device;

said gripper elements releasably retaining said flexible products;

at least one release device which can be selectively switched-on and switched-off;

said release device, when assuming its switched-on condition, opening the individual gripper elements moving therepast for releasing said products; and

means for bending said products into a substantially saddle-shaped configuration about a line extending essentially in the product conveying direction and which bending

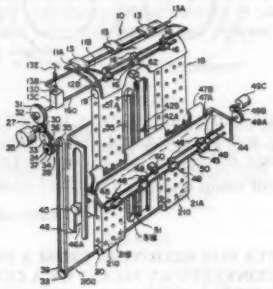
means are arranged, viewed in the product conveying direction, in the region of the product conveying path upstream of said release device, the products being kept in said substantially saddle-shaped configuration until the gripper elements are opened by said release device.

4,498,665

PAPER SORTING/STORING APPARATUS

Junji Watanabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 24, 1983, Ser. No. 478,640
Claims priority, application Japan, Apr. 16, 1982, 57-63661
Int. Cl.³ B65H *39/11*
U.S. Cl. 271—289 **3 Claims**



1. A paper sorting/storing apparatus, comprising:
transfer direction selecting means for selectively switching a transfer direction of a paper sheet between first and second transfer directions;
first paper transferring means for transferring the paper sheet in the first transfer direction selected by said transfer direction selecting means;
second paper transferring means for transferring the paper sheet in the second transfer direction selected by said transfer direction selecting means;
nonsorting/storing means for storing the paper sheet transferred by said first paper transferring means;
sorting/storing means for sorting and storing the paper sheet transferred by said second paper transferring means; and
paper transferring/driving means for stopping at least said second paper transferring means while said first paper transferring means is in motion, said paper transferring/-driving means including,
(a) a reversible drive source,
(b) a first one-way clutch section for transmitting a rotational force of said drive source in one direction to said first paper transferring means; and
(c) a second one-way clutch section for transmitting the rotational force of said drive source in the other direction to said second paper transferring means.

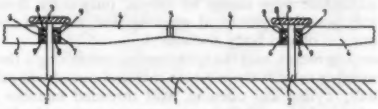
4,498,666

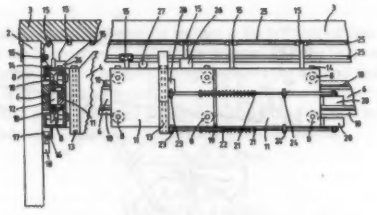
RACETRACKS

Neville C. McCallum, 2/111 Wingewarra St., Dubbo, NSW 2830, Australia

PCT No. PCT/GB82/00074, § 371 Date Oct. 28, 1982, § 102(e) Date Oct. 28, 1982, PCT Pub. No. WO82/03336, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 8, 1982, Ser. No. 438,962
Claims priority, application United Kingdom, Mar. 24, 1981, 8109128; Nov. 16, 1981, 8134407
Int. Cl.³ A63K *1/00*
U.S. Cl. 272—5 **20 Claims**

1. A racetrack at least part of which comprises a plurality of discrete, adjoining running lanes defined by a plurality of parallel barrier rails, each of said running lanes having an associated pair of starting gates each of which are pivotally mounted relative a respective barrier rail on one side of each lane via a housing which is movable lengthwise along a beam attached to running lane posts which support each said barrier rail, said starting gates of each pair being movable between a closed position in which they meet to form a barrier across said lane and an open position in which they lie substantially parallel to said barrier rails, the racetrack further comprising:





means for moving said pairs of starting gates relatively along the length of said barrier rails,
means for controlling movement of said pairs of starting gates such that said pairs of starting gates may be moved in unison at a controlled rate of acceleration, and
means for opening each of said pairs of starting gates simultaneously automatically when said gates are at a predetermined position.

4,498,667

PROCESS FOR COATING BALL CORES

Julius Tomar, Port-au-Prince, Haiti, assignor to Home of Champions, S.A., Port-au-Prince, Haiti

Continuation-in-part of Ser. No. 943,145, Sep. 18, 1978, Pat. No. 4,211,407, which is a division of Ser. No. 858,415, Dec. 17, 1977, Pat. No. 4,144,297. This application Apr. 12, 1979, Ser. No. 29,295
Claims priority, application Haiti, Dec. 28, 1976, 139
The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.
Int. Cl.³ A63B *37/06*
U.S. Cl. 273—60 B **2 Claims**

1. A coated ball selected from the group consisting of a baseball and a softball having substantially the same weight and rebound characteristics as a conventional baseball or softball comprising a thermoplastic core with foam at the center thereof gradually reducing in cell size radially outwardly to a skin, and a coating selected from the group consisting of thermoplastic rubber or plasticized vinyl resin, said thermoplastic

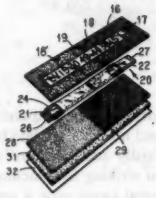
core being an ethylene-vinyl acetate copolymer having 12 to 30 percent by weight polymerized vinyl acetate units therein.

4,498,668

SCORE KEEPING DEVICE

Jack Bowen, 939 Rays Rd., Stone Mountain, Ga. 30083

Filed Mar. 26, 1984, Ser. No. 593,694
Int. Cl.[3] A63B 49/00
U.S. Cl. 273—73 R 10 Claims



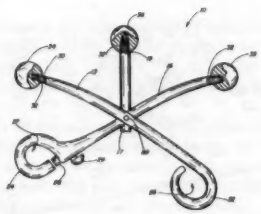
1. Score keeping device comprising:
(a) an elongated structure of a transparent flexible plastic material on which indicia for scoring a game are superimposed;
(b) at least one marker of a contrasting color to that of the indicia is enclosed and slideable within the structure; and
(c) means for holding the score marker in a fixed position relative to the indicia so that it will not move inadvertently during the game.

4,498,669

HAND-HELD DEFENSE WEAPON

Dai S. Chun, 408 Urbantale St., Marrero, La. 70072

Filed Jul. 13, 1983, Ser. No. 513,364
Int. Cl.[3] F41B 15/00; B25B 15/00
U.S. Cl. 273—84 R 10 Claims



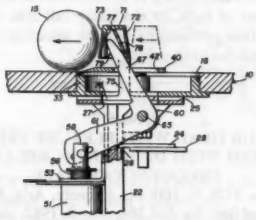
1. A hand-held defense weapon comprising:
a. a pair of first and second shafts connected together at a common pivot located at the central portion of each shaft;
b. a pair of handles respectively on one end of each shaft;
c. a pair of blunt elements mounted on each shaft at the end opposite the handle; and
d. a third shaft connected to the common pivot at one end, and carrying a blunt element at the other end, the three shafts being independently movable with respect to the other shafts and having a cross-section with a blunted outer surface so that the shafts can be positioned between the fingers of a user's hand and tightly gripped without injuring the user's hand, the shafts collapsing with respect to each other for storage to a position where the shafts are generally aligned side by side.

4,498,670

WIDE FACE HORIZONTALLY MOVABLE KICKER FOR PIN BALL GAME

Albin Peters, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Aug. 19, 1982, Ser. No. 409,411
Int. Cl.[3] A63F 7/00
U.S. Cl. 273—129 V 7 Claims



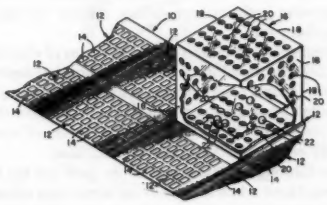
1. A pin ball game kicker apparatus for propelling a pin ball with a predetermined diameter into rolling engagement with a playfield board, said kicker apparatus comprising a frame, track means on said frame defining a rectilinear path, a kicker member cooperating with said track means for reciprocating movement with respect thereto along said path between a normal rest position and a kicking position, said kicker member having a kicking surface with a dimension in a direction transverse to said path and parallel to the playfield board greater than the predetermined diameter of an associated pin ball, said kicking surface being disposed above the playfield board for engagement with an associated pin ball when said kicker member is moved to its kicking position, and drive means carried by said frame and coupled to said kicker member for effecting movement thereof between the rest and kicking positions thereof.

4,498,671

LOTTO DICE

Michael Kostow, 224 Lincoln Ter., Norristown, Pa. 19403

Filed May 6, 1983, Ser. No. 492,369
Int. Cl.[3] A63F 7/04
U.S. Cl. 273—144 B 8 Claims



1. A chance device in combination with lotto game cards of at least two different lotto games, the cards each having a grid bearing a plurality of written numbers, a predetermined number of which are to be selected from the grid by a player in entering one of the lotto games, the device comprising:
six face members joined together in the form of a cube, at least two of the face members of the approximate size of the grids of said two different lotto games, each face member having recessed pockets corresponding in number and positioning to the numbers of the grid of one of the lotto game cards, said at least two of the face members having different patterns of pockets making the game

device operable in combination with lotto game cards of said at least two different lotto games;

a group of balls in corresponding number to the predetermined number of numbers to be selected in the lotto games; and,

means to keep the balls loosely in the vicinity of the face members, whereby the face members can be shaken and positioned upon the one of the lotto game grids with the pockets corresponding to the numbers of the grid to allow the group of balls to randomly fall into certain of the pockets thus providing a random selection of numbers on the one of the lotto grids.

4,498,672

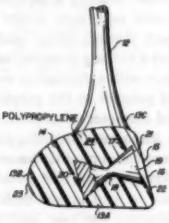
GOLF CLUB HEAD WITH FLEXURE FREQUENCY MATCHED WITH DISTORTION-RELAXATION FREQUENCY OF BALL

John G. Bulla, 2720 N. 10th St., Phoenix, Ariz. 85006

Continuation of Ser. No. 365,294, Apr. 5, 1982, abandoned. This application Oct. 17, 1983, Ser. No. 542,479

Int. Cl.³ A63B *53/04*

U.S. Cl. 273—169 **5 Claims**



1. A golf club head formed of a moldable plastic material comprising:

a body member formed of polypropylene having a sole, toe, heel and a planar striking face extending upwardly from said sole between said toe and heel and having a predetermined acute loft angle measured with respect to a plane passing through the axis of a shaft fastenable to said body member,

said body member being formed into a portion of an arcuate configuration with a plane surface thereof forming said striking face, and

an elongated solid steel insert with a modulus of elasticity of approximately 30 million cycles per second embedded in said body member and arranged so as to be completely surrounded by said plastic material with one end thereof spaced one-eighth of an inch from the center of and substantially perpendicular to said striking face,

said insert forming at least a part of the path for the shock wave produced when a ball having a resonant frequency of approximately 19 million cycles per second is struck by the head at approximately the center of said striking face, which shock wave moves through said one-eighth of an inch of the polypropylene material forming said body member, then longitudinally through said steel insert and the remainder of the polypropylene body member to the arcuate configuration of said body member and back the same path to the point of impact of the ball with the striking surface,

the density of the plastic material of said body member and said insert being such that the recovery rate of the flexure frequency of the head substantially equals the distortion-frequency of the golf ball when propelled from the face of the golf club head.

4,498,673

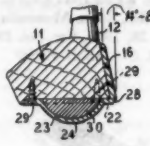
GOLF CLUB

Arthur P. Swanson, 1454 Estate La., Glenview, Ill. 60025

Filed Feb. 21, 1984, Ser. No. 581,804

Int. Cl.³ A63B *53/04*

U.S. Cl. 273—172 **2 Claims**



2. A golf head for a driving type golf club which comprises a member having a round nose, an arcuate back, a round heel, a hosel extending upwardly and rearwardly from the heel, a top, an upstanding front striking face inclined rearwardly 14° to 20° and having a central sweet spot, a generally flat sole, a single fragmental spherical projection integral with and depending from the central portion of the sole centered behind the sweet spot, said projection having a major diameter of 1 to 1½ inches and extending ⅜ to ½ inch below the sole, and said sole having a margin surrounding the projection of less width than said major diameter of the projection.

4,498,674

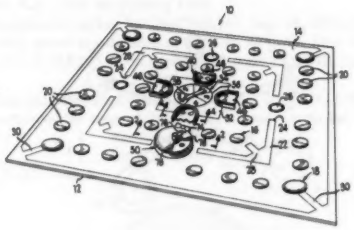
BOARD GAME WITH A COMMON PIECE HAVING A SPINNER

Michael J. Ferris; Paul H. Wise, both of Chicago, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 4, 1983, Ser. No. 463,920

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—243 **18 Claims**



13. A board game comprising:

an individual playing piece for each player;

a general playing piece that may be used by each player;

first chance means;

second chance means;

a board having a plurality of spaced indicia;

the individual and general playing pieces being movable from indica to indicia;

the general playing piece having a top with a depending wall and bearing the second chance means;

the depending wall having a bottom positionable on the board;

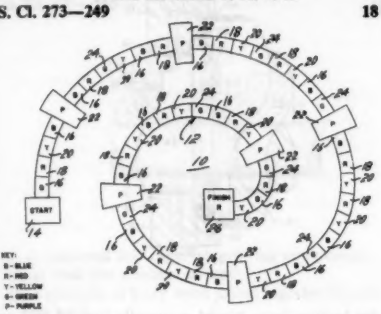
the second chance means including a spinner disc mounted for rotation below the top with only a portion of the disc viewable from the top of the general playing piece.

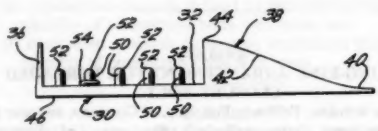
4,498,675

BOARD GAME WITH QUOITS MOVEMENT INDICATOR

William P. Jones, P.O. Box 297, Rochester, Wash. 98579

Filed Apr. 25, 1983, Ser. No. 488,173
Int. Cl.³ A63F 3/00, 9/02
U.S. Cl. 273—249 18 Claims





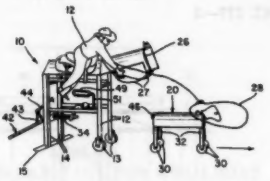
1. A game comprising:
a. a playing track;
b. said playing track having a plurality of areas for indicating position on said playing track;
c. said plurality of areas being of different first colors;
d. said playing track having a starting place and a finishing place;
e. a selection area for selecting one of said plurality of areas for indicating position on said playing track;
f. said selection area having a first means for selecting said one of said plurality of areas for indicating position on said playing track;
g. said first means comprising various means corresponding to various areas on said playing track;
h. a second means for associating with one of said various means for selecting said one of said plurality of areas for indicating position on said playing track;
i. said first means comprising different second colors corresponding to the colors of said plurality of areas;
j. said second means associating with one of said second colors for selecting one of said first colors for indicating position on said playing track;
k. said first means comprising a plurality of pegs of a first exterior cross-sectional dimension;
l. each of said pegs having a color and having indicia indicating said color of said peg;
m. said second means being an article having a passageway of a second interior cross-sectional dimension;
n. said second interior cross-sectional dimension being larger than said first exterior cross-sectional dimension so that said article can move around said pegs; and,
o. with said article around one of said pegs then said one of said pegs indicating an appropriate area for indicating position on said playing track.

4,498,676

SYSTEM FOR PRACTICING ROPING

Robert R. Runner, P.O. Box 307, Pavillion, Wyo. 82523

Filed May 2, 1984, Ser. No. 606,160
Int. Cl.³ F41J 9/02; A63B 67/06
U.S. Cl. 273—336 21 Claims



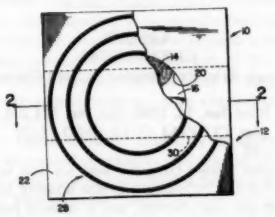
1. A system for practicing the art of roping a moving target simulating an animal; said system comprising:
(a) stationary support means adapted to support the person roping in a seated position;
(b) movable target means simulating an animal to be roped;
(c) propelling means adapted to propel said target means away from said stationary support means in a manner such that said person may practice the art of roping said target means; and
(d) actuating means, controlled by said person, which is adapted to actuate said propelling means.

4,498,677

EXPLOSIVE TARGET

John G. Dapkus, P.O. Box 180, Cromwell, Conn. 06416

Filed Mar. 22, 1983, Ser. No. 477,819
Int. Cl.³ F41J 5/06
U.S. Cl. 273—380 15 Claims



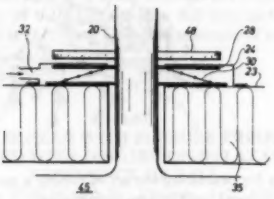
1. An explosive target comprising a hollow body assembly having a generally rectangular block-shaped configuration and including a body having an opening extending therethrough, front and rear end walls attached to said body and forming closures for the front and rear ends of said opening, explosive charge means contained within said opening for detonation upon projectile impact, a charge retaining disc mounted in fixed position within said opening and maintaining said explosive charge means generally adjacent one of said end walls, and target indicia imprinted on the outer surface of said front end wall and including a central target area having a shape substantially identical to the cross sectional shape of said opening and aligned in registry with said opening.

4,498,678

SHAFT SEAL

Alex D. Vestergaard, Kastrup, Denmark, assignor to Ingeniorfirmaet Lytzen KS, Herley, Denmark

Filed Feb. 28, 1983, Ser. No. 470,184
Claims priority, application Denmark, Mar. 3, 1982, 913/82
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—3 **9 Claims**



1. In an oven for connectively separating two otherwise independent, isolated medium chambers, seal means for a seal about a rotatable shaft extending through an opening in a wall of the oven, said seal means comprising

means forming a chamber surrounding a portion of the shaft and located at the lead-in of the shaft through the oven wall and including a pair of opposed walls extending parallel to the oven wall through which the shaft extends;

a pair of displaceable gaskets surrounding the shaft adjacent the opposed walls of said chamber, said gaskets having only a slip-fit on the shaft and said shaft after rotation is begun having no physical contact with the oven wall, the means forming the chamber and the displaceable gaskets, thus avoiding the creation of wear particles;

spring means urging the pair of gaskets to abut the opposed walls of the chamber to provide sealing cooperation with said walls; and

means communicating with said chamber providing pressure above atmospheric pressure within said chamber, creating a positive pressure therein to overcome the low pressure area that normally surrounds the shaft while the shaft rotates and to avoid penetration of impurities along the shaft from either side of said chamber surrounding the shaft, whereby the atmosphere on one side of said chamber does not extend through and mix with the atmosphere on the other side thereof.

4,498,679

GREASE SEAL

Paul J. Balczun, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Jan. 16, 1984, Ser. No. 571,234
Int. Cl.³ F16J *15/32*; B62D *55/20*
U.S. Cl. 277—92 **4 Claims**

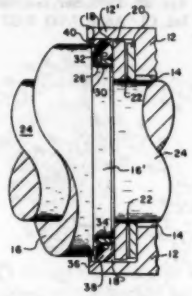
1. An annular grease-purgable seal for use in a trunnion assembly or the like including a grease housing having a bore opening from one end thereof, and a spindle having an end portion projecting into said bore and spaced radially from the periphery of said bore, comprising:

a substantially rigid base member adapted to closely encircle said end portion of said spindle;

a unitary annular body of resilient elastomeric material;

said body being of generally C-shaped cross-sectional configuration and including an inner section overlying and bonded to said mounting member, a bendable pivot section extending outwardly from said inner section adjacent one end portion thereof, and an outer section engageable with said chamber bore periphery and mounted by said pivot section for pivotal movement into engagement with the other end portion of said inner section;

said body during use of said seal being in a stressed condition wherein said outer section and said other end portion of said inner section are in said engagement with each other and are stressed in compression, and wherein said pivot section is under bending stress;



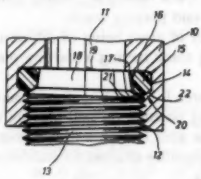
said outer section being biased outwardly toward said periphery of said chamber bore by the tendency of each of said stressed body sections to return to an unstressed condition.

4,498,680

SEALING-RING ARRANGEMENT FOR THREADED CLOSURE BOLT

Hermann Schobbe, Feilbach, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 6, 1984, Ser. No. 586,705
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1983, 3308043
Int. Cl.³ F16J *15/10*
U.S. Cl. 277—112 **12 Claims**



1. Sealing ring arrangement including a housing wall orifice extending through a housing wall of a high pressure vessel or the like, a threaded closure bolt for closing the orifice, and an elastomeric sealing ring interposed between the closure bolt and the housing wall to aid in sealing the housing orifice with an inserted closure bolt,

wherein said housing orifice includes an outer threaded portion, an intermediate relief groove portion adjacent to and having a diameter greater than the outer threaded portion, and an inner portion adjoining the relief groove portion,

wherein the threaded closure bolt includes a threaded portion, a thread run out collar portion adjoining the threaded portion, and a stud portion adjoining the thread run out collar portion,

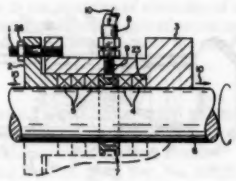
and wherein, with an inserted closure bolt, the sealing ring is clampingly abuttingly engaged by the thread run out collar portion and the stud portion, and the stud portion abuttingly engages an annular housing surface adjoining the inner end of the relief groove portion.

4,498,681

UNIVERSAL SEAL CAGE LANTERN RING WITH CHANNELS AND FLUID SLOTS

Larry Heinz, 4691 Anthony Pl. NW., Albany, Oreg. 97321

Filed May 16, 1984, Ser. No. 610,969
Int. Cl.³ F16J 15/18
U.S. Cl. 277—215 19 Claims



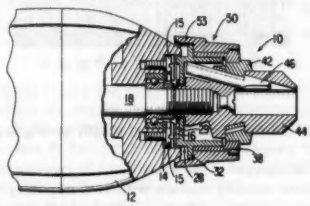
1. A universal seal cage/lantern ring comprising:
(a) at least one continuous land;
(b) a plurality of body webs joined together by said continuous land;
(c) at least one intermittent land projecting from each said body web;
(d) a plurality of fluid slots defined by adjacent faces of body webs;
(e) intermittent channels defined by intermittent lands and a plurality of intermittent body web bases; and
(f) continuous channels defined by continuous lands and a plurality of continuous body web bases.

4,498,682

FREE FLOATING ACTUATING SLEEVE FOR KEYLESS CHUCK

Thomas G. Glore, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 17, 1982, Ser. No. 442,408
Int. Cl.³ B23B 31/10
U.S. Cl. 279—1 K 3 Claims



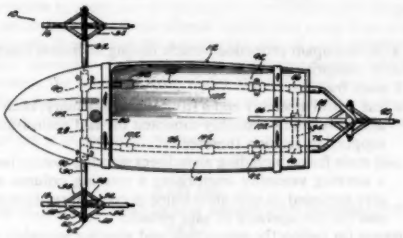
1. A keyless chuck for a motorized tool having a body supporting a drivemotor, a spindle shaft rotatable by said drive motor, and a chuck supported for rotation on said spindle shaft, said chuck comprising:
a chuck body; chuck jaws retained for rotation with said chuck and constrained for sliding movement on said chuck body toward and away from the axis thereof; grip actuating means responsive to rotation of said chuck by selective manipulation by an operator for sliding said chuck jaws into and out of gripping relation about a rotatable work tool; said grip actuating means including an annular collar axially constrained and rotatable on said chuck body; and means threadedly interconnecting said collar and each of said chuck jaws;
the improvement rendering said chuck keyless comprising:
a sleeve freely slidable and rotatable about said chuck body and encircling said annular collar; and means cooperating with means on said body and rendered effective by operator influenced slidable motion of said sleeve for establishing effectiveness of said grip actuating means to slide said chuck jaws about a rotatable work tool in response to rotation of said chuck, whereby movement of said grip actuating means is isolated from said operator by said sleeve.

4,498,683

STEERABLE CARRIAGE FOR A SAILBOAT

James R. Johann, 593 High Knoll Dr., Cedarburg, Wis. 53012

Filed Mar. 25, 1983, Ser. No. 478,706
Int. Cl.³ B62B 15/00
U.S. Cl. 280—16 11 Claims



1. A carriage for supporting a sailboat such that the sailboat can be operated on land or on ice, the carriage comprising:
a frame including
a pair of generally spaced apart elongated structural members adapted to extend along opposite sides of a sailboat, said elongated structural members being adapted to be positioned under the sailboat with one of said elongated structural members positioned under one side of said sailboat and with the other of said elongated structural members positioned under the other side of said sailboat and to support the sailboat thereon, and with a portion of said sailboat cradled between said elongated structural members and extending downwardly between said elongated structural members, the elongated structural members being parallel to the center line of the sailboat and each including forward ends adapted to support the bow of the sailboat and rearward ends adapted to support the stern, and
a forward frame member extending transversely to said parallel elongated structural members and connecting said forward ends of said elongated structural members, said forward frame member including opposite ends, and said forward frame member being adapted to be positioned beneath the bow of the sailboat so as to support the bow,
said frame defined by said elongated structural members and said forward frame member being resilient and flexible so as to be adapted to resiliently support the sailboat for movement of a sailboat in water,
a first ground engaging member supporting one of said opposite ends of said forward frame member,
a second ground engaging member supporting the other of said opposite ends of said forward frame member, and
a pivotable ground engaging member for supporting the stern of the sailboat, said pivotable ground engaging member supporting the rearward ends of said elongated structural members.

4,498,684

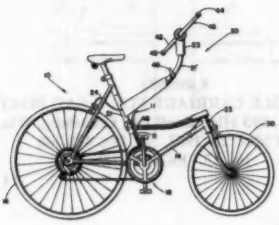
MANUPEDAL BICYCLE

Franklin S. Intengan, Hialeah, Fla., assignor to John H. Faro, Coral Springs, Fla.

Continuation of Ser. No. 272,361, Jun. 10, 1981, Pat. No. 4,417,742. This application Nov. 14, 1983, Ser. No. 550,805 The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.

Int. Cl.³ B62M *1/00*

U.S. Cl. 280—234 **2 Claims**



1. An occupant propelled vehicle having an indirect steering system comprising:

a main frame;

a rear wheel assembly and a front wheel assembly, each such assembly being rotatably mounted on said main frame in supporting relation thereto;

said main frame including an indirect steering system having a steering assembly comprising a steering column movably mounted on said main frame in co-axial relation to the seat for the operator of said vehicle;

means for indirectly connecting said steering assembly with a steering means;

a steering arm connected to and extending outwardly from said steering column and movable therewith;

a manual crank assembly (i) connected to a leading portion of said steering arm and movable therewith, (ii) positioned for operational rotation by the hands of the operator and comprising a central crank axis of rotation disposed and maintained at substantial perpendicular relation to a plane defined by the central axis of said steering column and steering arm, and (iii) interconnected in driving relation to at least one of said front and rear wheel assemblies and activating relation to breaking means of said vehicle whereby propulsion and breaking of said vehicle may be selectively accomplished through the operation of said manual crank assembly; and

said steering column, steering arm and manual crank assembly collectively pivotal relative to a remaining portion of said main frame coincident to said central axis of the operator's seat.

4,498,685

SKI BINDING

Reinhold Zoor, Munich, Fed. Rep. of Germany, assignor to Heinrich Wunder GmbH & Co. KG, Dachau, Fed. Rep. of Germany

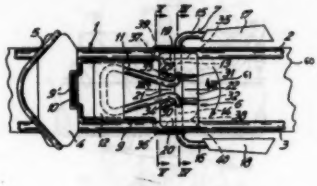
Filed Dec. 17, 1981, Ser. No. 331,928

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048175

Int. Cl.³ A63C *7/10*

U.S. Cl. 280—605 **32 Claims**

1. A ski, comprising a slat; retaining means for an article of footwear, said retaining means having a recess; support means carrying said retaining means and designed to support an article of footwear, said support means being mounted on said slat for pivotal movement between a first position in which both the toe and heel of a skier are adjacent to said slat and a second position in which the heel is lifted away from said slat; ski braking means including a brake movable between an inoperative position and an operative position in which forward and backward movement of said slat are inhibited, said braking means being mounted on said support means for movement therewith and said braking means further comprising a carrier for said brake, said carrier having means for urging said brake to said operative position in all positions of said support means when said support means is free of an article of footwear, said brake being held in the inoperative position by an article of



footwear on said support means; and arresting means for fixing said braking means in a predetermined position on said support means, as considered in the longitudinal direction of said slat, said arresting means comprising a spacer having an arresting end and being mounted on said carrier for movement between a free position and an arresting positioned in which said recess receives said arresting end to thereby fix said braking means in said predetermined position.

4,498,686

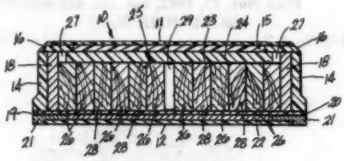
LAMINATED SKI REINFORCEMENT MEMBERS

Edward Pilpel, Manchester, and Franklin Meatto, Cromwell, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation of Ser. No. 318,190, Nov. 4, 1981, Pat. No. 4,455,037. This application Mar. 5, 1984, Ser. No. 586,180

Int. Cl.³ A63C *5/12*

U.S. Cl. 280—610 **9 Claims**



1. In a snow ski of predetermined length having in combination:

(a) a top surface;

(b) a bottom running surface with two opposing sides and bounded thereon by bottom metal edges extending the predetermined length of the ski;

(c) two opposing sides positioned generally perpendicularly to the top surface and the bottom running surface;

(d) a core of predetermined width formed from a predetermined material of known modulus of elasticity less than about 10.4×10^6 pounds per square inch positioned centrally between the two opposing sides;

(e) top edges formed from a predetermined material at least partially beneath the top surface adjacent and above the two opposing sides extending substantially the predetermined length of the ski;

(f) a layer of material of predetermined selection at least particlly above the bottom metal edges and of predetermined thickness;

(g) a layer of bonding material between the layer of material of predetermined selection and the bottom metal edges; and

(h) at least two reinforcement rib members positioned exteriorly of the core and adjacent and interiorly of the two opposing sides extending a distance less than the predeter-

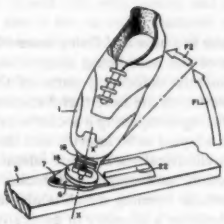
mined length of the ski connected on a first end to the top edges and on a second end to the layer of material of predetermined selection, the reinforcement rib members further being positioned generally vertically to the top surface and the bottom running surface and being formed from a predetermined material of predetermined thickness with a modulus of elasticity greater than about 10.4×10^6 pounds per square inch greater and than about 8 to 1 in comparison to the modulus of elasticity of the core material for imparting increasing rate of return and a controllably designed natural frequency to the ski.

4,498,687

PIVOTABLE CROSS-COUNTRY SKI BINDING

Georges P. J. Salomon, and Jean Hue, both of Annecy, France, assignors to Salomon S.A., Annecy, France

Filed Dec. 29, 1981, Ser. No. 335,523
Claims priority, application France, Jan. 6, 1981, 81 00358
Int. Cl.³ A63C *9/10*
U.S. Cl. 280—615 **39 Claims**



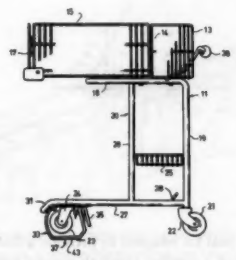
1. A ski binding comprising means for securing the front of a ski shoe to a ski, and wherein said binding further comprises means permitting the heel of said shoe to be lifted vertically while allowing for substantially free torsional movement of said shoe around a vertical axis of said binding after said heel has been lifted to a predetermined extent, and wherein said binding further comprises means for preventing lateral movement of said shoe until said heel has been lifted to a predetermined extent.

4,498,688

SHOPPING CART INCORPORATING REMOVABLE SKID, RUNNER OR SKI ATTACHMENT

Donald N. Walters, 7655 Arnold Dr., Wheatfield, N.Y. 14120, and Theodore P. Link, 222 West Ave., Lockport, N.Y. 14094

Continuation-in-part of Ser. No. 109,833, Jan. 7, 1980, Pat. No. 4,320,904. This application Mar. 23, 1982, Ser. No. 360,898
The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.
Int. Cl.³ B60F *5/00*
U.S. Cl. 280—7.12 **7 Claims**



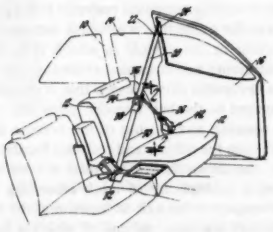
1. A shopping cart incorporating a removable attachment to facilitate use of such cart in snow, which comprises a nestable supermarket shopping cart, nestable with other such carts by relative horizontal motion thereof, which cart includes a pair of front wheels, each of which is rotatable about a horizontal axis which is transverse to the longtiudinal axis of the shopping cart when the cart is being moved forwardly, and which wheels are movable about a vertical axis, and a pair of rear wheels, each of which is rotatable only about a horizontal transverse axis in a vertical plane parallel to the longitudinal axis of the cart, a removable skid, runner or ski attachment which includes a pair of cart supporting skids, runners or skiis, which are simultaneously movable into inoperative and into operative positions, as desired, with respect to the shopping cart, so that when such cart supporting members are in operative positions they are below the shopping cart front wheels and alongside and outside of such wheels, bearing the weight of the cart instead of the front wheels bearing such weight, and so that when such members are in inoperative positions, which are retracted or storage positions, they are above the bottoms of the shopping cart front wheels, inside such wheels and substantially horizontal, and combination mounting and positioning means for selectively holding the pair of cart supporting members in operative or inoperative positions on the shopping cart and near the front wheels thereof and away from the back wheels thereof and for moving the pair of such members between operative and inoperative positions, during which movements the members pass under the shopping cart front wheels, which shopping cart-attachment combination is nestable with other such combinations when the attachments thereof are in inoperative positions.

4,498,689

STORAGE REEL FOR DOOR MOUNTED RESTRAINT BELT

Thomas P. Duffield, Pontiac, and James A. Winnale, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 13, 1983, Ser. No. 494,403
Int. Cl.³ B60R *21/02*
U.S. Cl. 280—803 **3 Claims**



1. In combination with a vehicle seat belt system including a restraint belt having shoulder belt and lap belt ends mounted on the door and an anchor belt having a first end mounted inboard of the seat and a second end releasably connected to the restraint belt by a disconnect buckle, a storage retractor mounting one of the shoulder and lap belt ends on the door to store the restraint belt upon release of the disconnect buckle comprising:

a reel rotatably mounted on the door and having the belt end connected thereto, a spring biasing the reel in the belt winding direction, a pawl and ratchet mechanism selectively operable between a locked condition to block the reel from spring wound rotation in the belt winding direction and an unlocked condition enabling spring wound rotation of the reel, control means effective to operate the pawl and ratchet mechanism to the locked condition in response to full unwinding of the belt from the reel, so that the belt is held at the fully extended length for restraint of a seated occupant and means adapted to selectively oper-

ate the pawl and ratchet mechanism to the unlocked condition whereby the spring wound reel retracts and stores the restraint belt upon release of the disconnect buckle coupling the anchor belt with the restraint belt.

4,498,690

DRIVE DEVICE FOR PASSIVE VEHICLE OCCUPANT RESTRAINT BELT SYSTEM

Juichiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

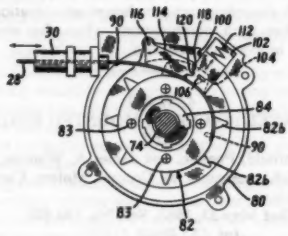
Filed Jul. 9, 1982, Ser. No. 396,804

Claims priority, application Japan, Jul. 20, 1981, 56-106638[U]; Aug. 26, 1981, 56-125285[U]

The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **7 Claims**



1. A passive vehicle occupant restraint belt system having a belt, a belt transfer guide that is movable between restraint and release locations in the vehicle in which it holds the belt in occupant-restraining and occupant-releasing positions, respectively, and a reversible drive device that is coupled by a flexible drive element to the belt transfer guide and is operable in response to opening and closing of the vehicle door to move the guide between the release and restraint locations characterized in that the drive device includes a rotatable sprocket wheel having a multiplicity of teeth extending radially outwardly with respect to the axis of rotation of the wheel, in that the drive element is a tape, one end of which is fastened to the belt transfer guide and the other end to the sprocket wheel, the tap having spaced-apart holes in at least the portion thereof adjacent said other end that are adapted to receive the sprocket teeth such that the tape is wound onto and unwound from the sprocket wheel to move the guide between said locations, in that there is a guideway closely adjacent the sprocket wheel through which the tape passes and by which it is guided into and out of engagement with the sprocket wheel and in that there is a movable guide mechanism for guiding the part of the tape between the sprocket wheel and the guideway, the guide mechanism including a guide member engaging said part of the tape and movable generally radially of the sprocket wheel and a guide control member that is engageable with the guide member and is adapted to establish selected positions of the guide member in relation to the number of wraps of the tape on the sprocket wheel, whereby the wraps of the tape wound on the sprocket wheel are prevented from loosening in the event that the belt transfer guide should stop abruptly while the tape is pushing it and is unwinding from the reel.

4,498,691

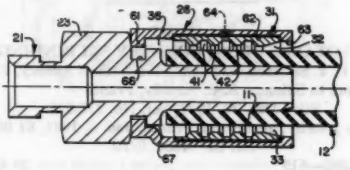
HOSE FITTING AND METHOD OF ASSEMBLY

Horise M. Cooke, Weatherford, Tex., assignor to Stratoflex, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 295,792, Aug. 24, 1981, abandoned, which is a continuation of Ser. No. 122,840, Feb. 20, 1980, abandoned. This application Oct. 14, 1982, Ser. No. 434,265

Int. Cl.³ F16L *25/00*

U.S. Cl. 285—12 **31 Claims**



1. Apparatus for use in a hose and fitting assembly, the fitting and an end section of the hose being adapted to be secured together by permanently deforming parts of the fitting to compress the end section of the hose therebetween, said apparatus comprising a fitting comprising a socket-nipple including a tubular nipple part adapted to be inserted into the end section of the hose and a cylindrical socket part adapted to extend around the end section, said nipple and socket parts being spaced to form an annular opening which is adapted to receive the end section of the hose, a plurality of generally cylindrical inserts sized for insertion in said opening and between the end section and said socket part, and said inserts having different radial thicknesses which are inversely related to different radial thicknesses of hose sections, said socket part and a selected insert from said plurality of inserts being adapted to be permanently deformed radially inwardly and thereby to substantially uniformly compress the end section of the hose between said nipple part and said insert by reducing the width of said annular opening, said insert having hose gripping teeth formed on the inner periphery thereof, the radial thickness of said selected insert matching the radial thickness of the hose section to produce optimum compression on the hose end section.

4,498,692

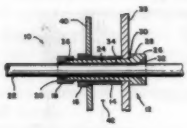
PENETRATION SEAL

Mervin D. Swanson, 1625 - 13th Ave. NW., Puyallup, Wash. 98371

Filed Sep. 2, 1983, Ser. No. 529,149

Int. Cl.³ F16L *39/00*

U.S. Cl. 285—20 **1 Claim**



1. A penetration seal kit adapted to provide a fluid tight seal for the penetration of a conduit through spaced apart first and second side wall means of a chamber; wherein said penetration seal kit comprises:

a penetration sleeve having a head at one end, a shank, and a longitudinal bore passing completely through said penetration sleeve; wherein said bore is adapted to permit the passage of said conduit therethrough; wherein said head defines a closed knife edge; and wherein said shank of said penetration sleeve is adapted to pass completely through said spaced apart first and second side wall means;

a connection means, adapted to engage said shank of said penetration sleeve outside said both of side wall means, for pulling said knife edge of said penetration sleeve firmly against one of said side wall means to form a fluid tight bite seal between said knife edge and said one of said side wall means;

a tubular compression sleeve adapted to permit the passage of said shank of said penetration sleeve therethrough; wherein said compression sleeve is adapted to extend from said connection means to said one of said side wall means to transfer loading from said connection means to said one of said side wall means to help to prevent undesireable deformation of at least one of said side wall means when said connection means pulls said knife edge firmly against said one of said side wall means; and wherein said compression sleeve has an outer diameter sized at least about as large as the diameter of said knife edge to be adapted to support said one of said side wall means beneath said knife edge to help to prevent undesired deformation of said one of said side wall means adjacent said knife edge when said connection means pulls said knife edge firmly against said one of said side wall means;

a ferrule adapted to receive said conduit adjacent one end of said shank of said compression sleeve; and

a seal connection means, adapted to engage said shank of said compression sleeve, for making a firm compression seal between said conduit, said ferrule and said shank of said compression sleeve;

wherein one end of said shank of ssid penetration sleeve defines a chamfer adapted to engage a corresponding portion of said ferrule; and

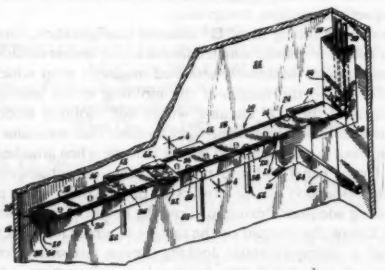
wherein, when said penetration seal kit is installed on said first and second side wall means, said head of said penetration sleeve is adapted to be located within said chamber to enable any pressure within said chamber to act against said head to tend to more firmly engage said knife edge on said head with said one of said side wall means.

4,498,693

RAIL SYSTEM WITH PASSAGEWAYS FOR THE CONDUCTION OF FLUID FLOW

Ernst F. Schindele, 505 W. Hill Rd., Stamford, Conn. 06905

Filed Feb. 22, 1983, Ser. No. 468,081
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—137 R **6 Claims**



1. A rail system for providing conduction of fluid flow with ready access at a convenient location to said fluid flow comprising:

a rail having two or more passageways extending therein adapted to provide a conduit for at least two different types of fluid flow therethrough,

said passageways having coupling threads on the ends thereof for accommodating coupling fluid flow to said passageways and for providing a means for intercoupling one rail to another,

mounting means for removably mounting said rail on a surface,

means on said rail for accommodating removably mounting said rail onto a wall and accommodating the mounting of equipment on said rail,

coupling means connected to said coupling threads on one end of said rail for coupling said passageways in said rail to at least two different types of external sources of fluid flow to be conducted by said passageways in said rail,

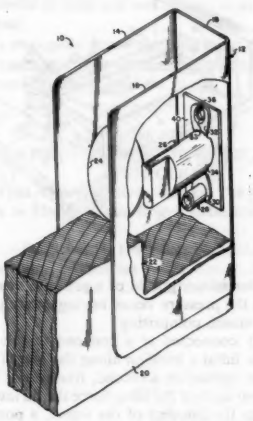
and access means coupled to said passageways in said rail for providing convenient access to the fluid flow conduction paths provided by said passageways in said rail.

4,498,694

DOOR REPAIR SYSTEM

David R. Warwick, P.O. Box 202, Lafayette, Calif. 94549

Filed Oct. 31, 1983, Ser. No. 547,731
Int. Cl.³ E05C *21/00*
U.S. Cl. 292—337 **2 Claims**



1. A device for repairing a door comprising

a generally rectangular U-shaped member adapted to enclose and engage the edge of a door proximate the latch and door handle location, said U-shaped member comprising

a pair of leg members and a saddle portion, said saddle portion defining a generally flat surface,

means defining a hole in each of said leg members adapted to receive a door handle latch actuating mechanism,

means defining a hole in said saddle portion adapted to permit a latch bolt to pass therethrough,

a latch plate adapted to engage the inside surface of said saddle portion between said leg members, said latch plate having means defining a hole proximate each end thereof, the region around said holes deformed to define countersunk portion projecting inwardly of said saddle portion,

means defining a pair of holes in said saddle portion aligned coincident with said holes in said latch plate,

a door latch apparatus housing having a pair of fastening ears proximate the base thereof, said ears comprising means defining a hole therethrough aligned coincident with said holes in said latch plate and deformed to define a countersunk area adapted to nest with said countersunk region of said latch plate hole,

an extension member defining a hollow, generally cylindrical, shaft having one end adapted to engage the outwardly projecting portion of said countersunk hole in said door latch housing ears,

a machine screw having a threaded shank and a head, said head adapted to engage the other end of said extension member,

a fastening member comprising an internally threaded hollow shank and a flat head having tapered sides adapted to match the taper of said countersunk holes, said internal threads of said hollow shank adapted to engage the threads of said machine screw whereby, said machine screw pulls said fastener member into engagement with the edges of said hole in said saddle portion and deforms said edges to a countersunk position matching the countersunk portions of said hole in said latch plate.

4,498,695

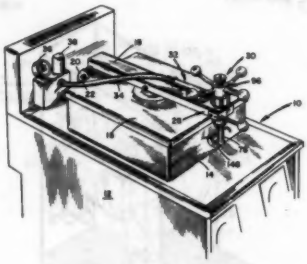
PRESSURE COOKER LID LATCH AND LOCK

Warren A. Pardo, Bel Air, Md., assignor to Robert C. Duckett, Baldwin, Md., a part interest

Filed Sep. 1, 1981, Ser. No. 298,481

Int. Cl.³ E05C *5/02*

U.S. Cl. 292—260 **40 Claims**



1. Apparatus for securing a lid of a pressure vessel over an opening thereof, the pressure vessel having a catch located on the body of the vessel, comprising:

a bar pivotally connected at a first end to the vessel and engaging the lid at a location along the length of the bar;

latching means carried on a second, free end of the bar for biasing the bar against the lid to force the lid into a secured position over the opening of the vessel, a portion of the latching means engaging the catch on the body of the vessel for latching the bar and associated lid over the opening; and,

locking means carried by the bar and disposed adjacent to and engageable with the latching means for inhibiting unlatching of the latching means in response to pressure conditions existing within the pressure vessel, at least a portion of the locking means being mounted on the bar for horizontal movement to engage at least a portion of the latching means.

4,498,696

BUMPER FOR AUTOMOTIVE VEHICLES

Dietmar Kalchschmied, Munich; Hartmut Bonenberger, Puchheim, and Bernd Huber, Munich, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

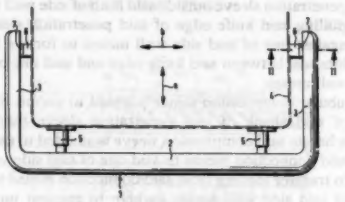
Filed Jun. 6, 1983, Ser. No. 501,281

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221293

Int. Cl.³ B60R *19/04*

U.S. Cl. 293—126 **18 Claims**

1. A bumper for automotove vehicles with a central section displaceable in the longitudinal direction of the vehicle and two lateral end sections adjoining the central section, each of the end sections positioned relative to the vehicle by a retaining member projecting away from the vehicle body in the transverse direction of the vehicle and by a sliding member attached, respectively, to each of the end sections, one of the retaining member and the sliding member for each of the end sections encompassing the other in a fork-like fashion so that the end sections are diplaceable in the longitudinel direction of



the vehicle as well as in the transverse direction of the vehicle, one of the retaining member and the sliding member for each of the end sections including at least one inclined surface inclined toward a plane of symmetry associated with a mouth of the fork, the retaining member and sliding member for each of the end sections cooperating by way of said at least one inclined surface to absorb and dissipate an impact received by the respective end section.

4,498,697

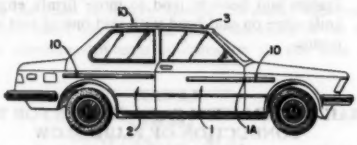
PORTABLE, POSITIONABLE, LOCKING MAGNETIC MOLDING TUBES FOR VEHICLE PROTECTION

William E. McGlone, and Leonard J. Genest, both of P.O. Box 2759, Mission Viejo, Calif. 92691

Filed Jun. 2, 1983, Ser. No. 377,006

Int. Cl.³ B60R *19/08*

U.S. Cl. 293—128 **5 Claims**



1. A system of locking, readily positionable, impact-absorbing protective molding tube for metal vehicle body panels or other ferous surfaces; which attaches to said panels or surfaces by magnetic attraction, comprising:

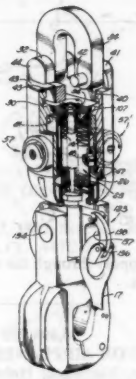
an extruded tubing of a "D" channel configuration, formed of rubber or plastic which adheres to any ferous surface by means of an adhesively attached magnetic strip which is attached to the length of the molding in the underside recess of the "D" channel where said molding incorporates an internal flat semi-rigid member that maintains the molding in a straight and lateral attitude when attached to a ferous panel and also provides extra impact-absorbing and dispersion characteristics to the molding while providing adequate flexing to allow the length of the molding to follow the contour on the surface of which it is attached and a circumferential locking device consisting of a formed and coated wire retainer loop culminating in two reverse-band locking members where said locking device fits over the molding and the distally protruding locking members are then available for attachment to panel edges or the inside lip of automobile doors to prevent theft.

4,498,698

DRILL RIG HOOK

Abraham Zimmermann, Irvine, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Apr. 18, 1983, Ser. No. 485,595
Int. Cl.³ B66C 1/40
U.S. Cl. 294—82 R **28 Claims**



1. A device for suspending a load in a well rig, comprising:
a tubular vertically extending outer body;
first connector means attached to said outer body and connectable to a suspending element to support said body in the rig;
a tubular vertically extending inner body contained within said outer body and movable upwardly and downwardly relative thereto;
second connector means supported by said inner body for movement upwardly and downwardly therewith and adapted to be connected to and suspend the load;
yielding means within said tubular inner body yieldingly urging it upwardly relative to said outer body and first connector means;
a structure supported by said first connector means and received within said tubular inner body applying upward force to said yielding means to support said inner body and load through said yielding means and for downward movement relative to the outer body against the tendency of said yielding means; and
stop means acting upon downward movement of said inner body relative to said outer body to a predetermined positive load transmission position to prevent further downward movement of the inner body beyond said position and thereby transmit load forces from said inner body to said outer body through said stop means.

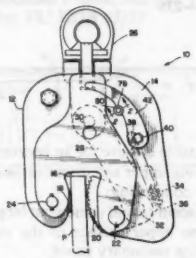
4,498,699

LIFTING CLAMP LOCKING MECHANISM WITH PUSH BUTTON RELEASE HANDLE

William Davies, Jacksonville, Fla., assignor to J. C. Renfroe and Sons, Inc., Jacksonville, Fla.

Filed Oct. 29, 1982, Ser. No. 437,799
Int. Cl.³ B66C 1/48
U.S. Cl. 294—101 **6 Claims**

1. A lifting clamp for articles such as steel plates comprising:
a clamp body having spaced side plates defining a slot to receive the article to be lifted;
a pair of opposed jaws mounted on opposite sides of said slot with one of said jaws being pivotally mounted for opening and closing movements relative to the other jaw;
a shackle mounted for guided movement in said clamp body and adapted for connection to a lifting force;
link means connecting said shackle to said pivotally mounted jaw to close said jaws when a lifting force is applied to said shackle, said link means and said pivotally mounted jaw forming an assembly;
shiftable locking mechanism engagable with said assembly to lock said jaws in respective open or closed positions including a pivotally mounted handle operable from the exterior of the clamp body to shift said mechanism from open jaw position to closed jaw position;



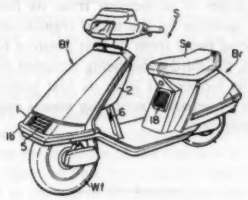
lock means independent of said locking mechanism mounted on said clamp body engagable with said handle to latch said handle to hold said mechanism in its closed jaw position; and
manually engagable means movably mounted on said handle to be engagable with said lock means to release said handle from its latched position.

4,498,700

VENTILATOR FOR TWO- OR THREE-WHEELED VEHICLE

Takayuki Fujii, Ooi, and Norio Tanaka, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1983, Ser. No. 455,516
Claims priority, application Japan, Jan. 7, 1982, 57-1129
Int. Cl.³ B62J 17/02
U.S. Cl. 296—78.1 **11 Claims**



1. A ventilator for a two- or three-wheeled vehicle including a front body having at least a front panel covering the front of a head pipe and a leg shield covering legs and feet of a rider sitting on a seat, said front panel having its front edge portion located forwardly and upwardly of a front wheel of the vehicle, said front panel extending rearwardly while surrounding said head pipe by side wall portions thereof and being connected to said leg shield to define an interior space between said front panel and said leg shield, said ventilator comprising:
an air inlet means provided in said front panel for the intake of airflow produced by movement of the vehicle;
an air outlet means provided in said leg shield for exhausting said airflow; and
an air passage for communicating said air inlet and outlet means, said interior space between said front panel and said leg shield serving as said air passage of the ventilator.

4,498,701

RETRACTABLE CLOSURE PARTICULARLY SLIDING ROOF APPARATUS FOR A MOTOR VEHICLE

Gerard Queveau, Amik-Farm, Le Pin, 79140 Cerizay, France

Filed Mar. 1, 1983, Ser. No. 471,160

Claims priority, application France, Mar. 1, 1982, 82 03346; May 19, 1982, 82 08877

Int. Cl.³ B60J 7/18

U.S. Cl. 296—216 12 Claims

1. A retractable closure for an aperture in a generally planar structure having upper and lower surfaces and a relatively thin cross-section comprising:

an area adjacent to and somewhat larger than the aperture in which the upper surface of the structure is recessed to form a first stationary panel;

a second panel mounted for translation between a first, closed position substantially flush with the upper surface of the structure and covering said aperture and a second, open position over the first panel in the recessed area adjacent said aperture;

a third panel mounted above the first panel for movement having a component normal to the upper surface of the structure, the third panel being mounted for movement between a first, lowered position substantially flush with the upper surface of the structure and covering the recessed area and a second, raised position in which it creates a vertical space between its lower surface and the stationary panel into which vertical space the second panel translates in moving into its second, open position, the path of movement of the third panel between its first and second positions being defined by lifting members connected between the third panel and the upper surface of the structure within the area of the recess; and

means for actuating the second and third panels to effect movement between their respective first and second positions, the third panel being actuated during at least the initial stages of movement from its first position to its second position by the initial translational movement of the second panel from its first position toward its second position, the third panel being actuated during the remainder of its movement from its first position to its second position by separate actuating means associated with the lifting members.

4,498,702

SEATING UNIT WITH FRONT FLEX AREA

William B. Raftery, Arlington, Tex., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Jun. 11, 1982, Ser. No. 387,415

Int. Cl.³ A47C 1/034

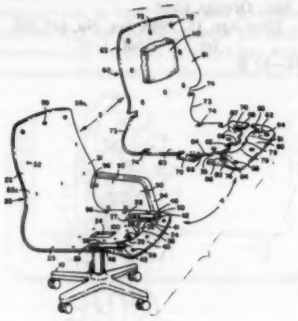
U.S. Cl. 297—312 44 Claims

1. A seating unit comprising:

a seat element for supporting a user;

a thigh support disposed in front of said seat element so as to contact at least a portion of the thigh area of a user; and

leaf spring means flexibly resiliently connecting said seat element and said thigh support, such that said thigh support will be deflected downward under the weight of a user's legs, said leaf spring means being sufficiently stiff to provide at least some support for the weight of a user's legs when the user is seated in the seating unit, said leaf spring means providing the sole substantial support for



said thigh support through the range of deflection of said thigh support.

4,498,703

SEAT FOR AIRPLANES AND BUSES

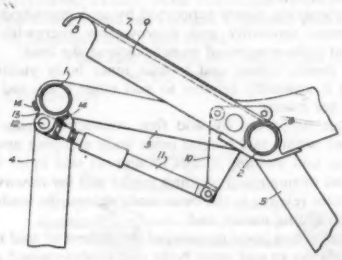
Karl Schmidhuber, Nürtingen; Helmut Wall, Kirchheim, and Vojtech Demovic, Kircheim, all of Fed. Rep. of Germany, assignors to Keiper Recaro GmbH & Co., Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,560

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122224

Int. Cl.³ A47C 1/032

U.S. Cl. 297—328 9 Claims



1. A seat for airplanes, buses, and the like, comprising:

a seat frame having a front cross member, side beams, and a rear cross member formed by a rear pipe with a longitudinal axis therethrough;

a seat upholstery support connected near its rear edge with the rear cross member of the seat frame, said seat upholstery support being pivotable about the longitudinal axis of the rear pipe;

means for locking both sides of the seat upholstery support in a selectable pivot position;

a stepless adjustable-length bar forming a part of the locking means and being arranged beneath one of the side beams of the seat frame, said stepless adjustable-length bar further having a front end and a rear end;

a connecting body forming another part of the locking means and being arranged beneath the front cross member of the seat frame, said connecting body further being rigidly connected to the seat frame and also being attached to the front end of the stepless adjustable-length bar; and

a pivot lever forming a third part of the locking means, having its one end attached to the rear end of the stepless adjustable-length bar and having its other end attached to

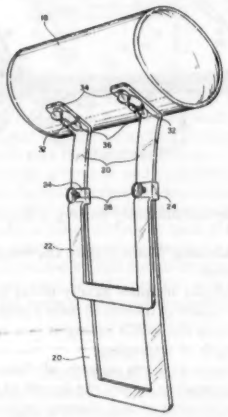
the seat upholstery support near the longitudinal axis of the rear pipe.

4,498,704

HEADREST FOR CHAIR WITH SOFT BACKREST

Joseph R. Hildreth, 5015 Old Cheney Hwy., Orlando, Fla. 32807

Filed Jun. 17, 1982, Ser. No. 389,215
Int. Cl.³ A47C *7/36*
U.S. Cl. 297—397 **4 Claims**



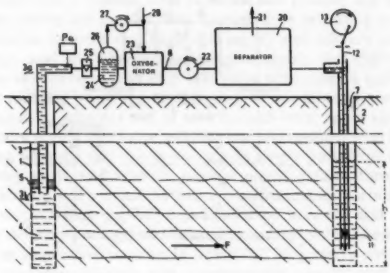
1. A headrest device particularly adapted for removable installation upon a non-rigid backrest of a chair or wheelchair, comprising a first elongate member of generally U-shaped configuration, a pillow-like head-contacting member mounted upon the upper end of said first member, a second generally U-shaped member residing in a plane generally parallel to the plane of said first member, means provided on said second member for slidable attachment to portions of said first member, with said second member being slidable in order that a height adjustment for said head-contacting member can be achieved, a major portion of said second member being spaced close to said first member so as to define a relatively narrow slot between said members, into which slot the fabric backrest portion of a chair or wheelchair can be received, with the length of said first member and said second member being such that they extend down along opposite sides of a backrest portion of the chair or wheelchair for a sufficient distance as to provide a stable mounting for said head-contacting member, said first and second members each having a comparatively wide lateral spacing for stability reasons, and said first member possessing a slight degree of out-of-plane curvature in order to essentially coincide with the natural curvature of the spine of the occupant of the chair or wheelchair, said head-contacting member being adjustably mounted upon said first member, so that adjustments of said head-contacting member in a direction substantially perpendicualr to the plane of said first member can be accomplished.

4,498,705

METHOD AND APPARATUS FOR IN-SITU MINING BY LEACHING ORES CONTAINING METAL VALUES

Jacques Roussel, Hauterives, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 11, 1983, Ser. No. 474,270
Claims priority, application France, Mar. 17, 1982, 82 04480
Int. Cl.³ E21B *43/28*
U.S. Cl. 299—4 **19 Claims**



1. In a method for in-situ mining by leaching ore with a two-phase lixiviant comprising a leach solution or liquor admixed with oxygen, circulating the lixiviant down an injection pipe arranged in an injection hole and opening at its downstream end into a leach zone at the bottom of the injection hole, allowing the lixiviant to leach the ore thereby producing pregnant lixiviant containing metal compounds of the ore, recovering the pregnant lixiviant from a production hole, separating the metal compounds from the lixiviant, regenerating and reoxygenating the lixiviant, and recycling the reoxygenated lixiviant down the injection pipe, the improvement comprising the steps of:

(a) selecting the inner diameter of the injection pipe taking into account the volumetric flow rate of the lixiviant, the hydrostatic increase in pressure and the drop in pressure due to loss of head during the transportation of the lixiviant from the upstream end to the downstream end of the injection pipe so that the pressure of the lixiviant at the downstream end of the injection pipe is substantially equal to the pressure of the lixiviant at the upstream end of the injection pipe and the pressure of the lixiviant being transported down the injection pipe is at no time substantially less than the pressure at the upstream end of the pipe;

(b) maintaining the pressure of the lixiviant at the upstream end of the injection pipe less than the fracturing pressure of the rock at the top of the leach zone; and

(c) maintaining the concentration of the dissolved oxygen in the lixiviant at a value less than the saturation point for the pressure of the lixiviant at the upstream end of the injection pipe.

4,498,706

SOLUTION MINING OF TRONA OR NAHCOLITE ORE WITH AQUEOUS NAOH AND HCL SOLVENTS

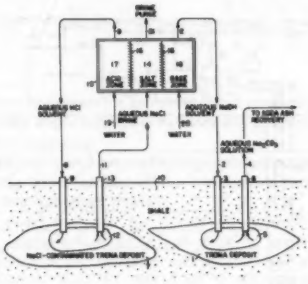
Joseph M. Ilardi, De Witt, N.Y., and David Goldstein, East Brunswick, N.J., assignors to Intermountain Research & Development Corp., Green River, Wyo.

Filed Aug. 15, 1983, Ser. No. 523,486
Int. Cl.³ E21C *41/08*; E21B *43/28*
U.S. Cl. 299—5 **13 Claims**

1. A cyclic method for solution mining subterranean ore deposits of trona or nahcolite which comprises

(i) contacting a first subterranean trona or nahcolite ore deposit with aqueous sodium hydroxide solvent to form an aqueous sodium carbonate solution;

(ii) withdrawing aqueous sodium carbonate solution from the region of the first ore deposit, whereby soda ash may be recovered from the withdrawn sodium carbonate solution;
(iii) contacting a second subterranean trona or nahcolite ore deposit with aqueous hydrogen chloride solvent to form an aqueous sodium chloride brine;
(iv) withdrawing the aqueous sodium chloride brine from the region of the second ore deposit;



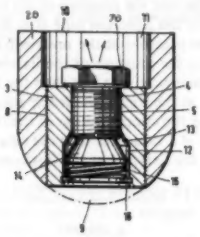
(v) introducing the withdrawn sodium chloride brine as feed solution into an electrodialysis cell and electrodialyzing the brine to yield aqueous sodium hydroxide and aqueous hydrogen chloride; and
(vi) recycling the aqueous sodium hydroxide and the aqueous hydrogen chloride to the first and second subterranean ore deposit, respectively, to repeat the solution mining recovery cycle.

4,498,707

CUTTING ROLLER

Gerd Best, Sprockhövel, and Norbert B. Weikert, Dortmund, both of Fed. Rep. of Germany, assignors to Krampe & Co. Fertigung in Bergbaubedarf GmbH Zweigniederlassung, Pelkum, Fed. Rep. of Germany

Filed Aug. 24, 1983, Ser. No. 526,164
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302103
Int. Cl.³ E21C *7/08*
U.S. Cl. 299—81 **5 Claims**



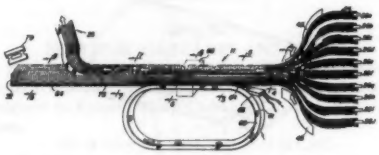
1. A cutting roller, comprising at least one blade with a peripheral surface; a plurality of cutting tools arranged on said peripheral surface; a plurality of interchangeable spraying nozzle units inserted in said blade and each being arranged near the respective cutting tool and assigned thereto to spray a hydraulic fluid thereonto; each nozzle unit including a spraying nozzle, a nozzle-receiving member formed with a bore to receive said spraying nozzle therein, and locking valve also mounted in said bore immediately against said spraying nozzle to abut the latter when the nozzle is fully inserted into said bore; said nozzle receiving member, said spraying nozzle and said locking valve being arranged in each unit coaxially to each other in a cartridge-like manner, said blade being formed with a plurality of connection passages arranged in communication with a source of hydraulic fluid and each connected to the respective bore of the nozzle-receiving member to supply fluid to the respective nozzle; said locking valve continually opening said bore so as to allow the fluid to flow from the respective connection passage into the spraying nozzle of the respective unit and then towards the respective cutting tool when the spraying nozzle is fully inserted into said bore and automatically sealingly blocking said bore to prevent the fluid from flowing from the respective connection passage towards the respective cutting tool when the nozzle is completely removed from said bore.

4,498,708

CONTINUOUS METHOD AND APPARATUS FOR MAKING A BRUSH

Jonathan J. Bromboz, 11 Chaparrel Ct., Novato, Calif. 94947

Filed Jan. 3, 1983, Ser. No. 455,282
Int. Cl.³ A46D *1/08*
U.S. Cl. 300—2 **24 Claims**



1. A method for continuously making a brush-like material comprising:
winding and adhering filament onto the outer surface of a tubular member;
opening said tubular member axially about its length with said filament adhering thereto to form a strip, said filament extending across the width arranged in a spaced manner about the length of said strip;
severing said strip to form strands of filament segments along a line extending axially the length of said strip;
exposing an end section of said filament segments;
gathering a plurality of said strips holding said filament segments and stacking said strips side by side in a spaced manner;
immersing portions of said exposed section of said filament segments in liquid anchoring material;
curing said liquid material to secure said filament segments; and,
removing remaining strips from embedded filament segments to form a finished band of brush-like material.

4,498,709

AXLE FOR USE WITH A TIRE INFLATION SYSTEM

Calvin G. Wells, and Steve B. Szabo, both of Warren, Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 30, 1983, Ser. No. 509,578
Int. Cl.³ B60C *23/00*
U.S. Cl. 301—5 VH **3 Claims**

1. An axle for use with a tire inflation system, said axle being of the type which includes a central portion with a pair of hollow spindles welded at opposite ends thereof, each of said spindles being capable of receiving a rotatable hub thereon for support of a wheel and tire, said hub including an intermediate cavity which is sealed to define with a wall of said spindle a reservoir for inflation air for said tire, said spindle being capable of being coupled at a region axially inwardly of said hub at a predetermined circumferential location thereon to said tire inflation system to provide said inflation air for said reservoir, said axle comprising:

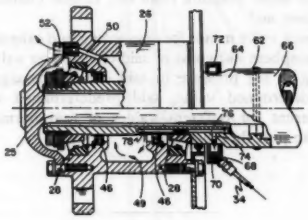
said spindle having a cylindrical outer surface at said region;

said spindle having an axially extending passage in said wall thereof beginning at an interior surface thereof and terminating in alignment with said intermediate cavity of said hub;

said spindle having a first radially extending passage from said cylindrical outer surface to terminate at said axially extending passage;

said spindle having a second radially extending passage in said wall connecting said axially extending passage with said reservoir;

said axially extending passage being sealed at said interior surface;



a pair of collar elements, each said collar element having a cylindrical inner surface matching said cylindrical outer surface of said spindle, a coupling passage and a fitting for mating with said tire inflation system;

a circumferential groove in said cylindrical inner surface of said collar element intersecting said coupling passage; and

each of said collar elements being respectively mounted on said cylindrical outer surface of each of said spindles with said first radially extending passage and said coupling passage connected by said circumferential groove and said fitting positioned at said predetermined circumferential location for mating with said tire inflation system.

4,498,710

DUAL BRAKE VALVES

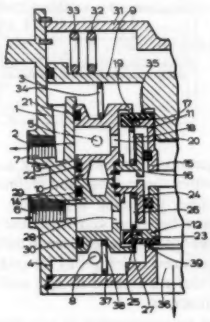
Robert J. Smith, Blackwood, Wales, assignor to Lucas Industries public limited Company, Birmingham, England

Filed Mar. 15, 1983, Ser. No. 475,524

Claims priority, application United Kingdom, Mar. 17, 1982, 8207834

Int. Cl.³ B60T *15/04*

U.S. Cl. 303—6 R **4 Claims**



1. A dual brake valve assembly for use in fluid pressure-operated vehicle braking systems embodying two independent braking circuits, said valve assembly comprising a housing provided with a bore and with sets of primary and secondary ports associated respectively with the two braking circuits and each said set of ports comprising a supply port for connection to a source of fluid under pressure and a delivery port for connection to a brake actuator, an exhaust, two co-axial primary and secondary valves which are operative when actuated to isolate said delivery ports from said exhaust and connect said delivery ports to the said respective supply ports, a primary piston working in said bore in said housing, and a secondary piston also working in said bore in said housing, wherein said primary piston operates said primary valve directly and acts through said primary valve and said secondary piston to operate said secondary valve, and said secondary piston is provided with a through-bore in which said primary and secondary valves are located, said through-bore providing communication between said respective supply and delivery ports of each said set when said respective supply and delivery valves are operated, and each said valve comprising a hollow valve member which is guided to slide in said through-bore, a seating at an adjacent end of said through-bore, and a spring normally urging said valve member into engagement with said seating whereby said valves isolate said supply ports from said delivery ports, and wherein passage means defined through said hollow valve members and a communicating portion of said through-bore provide communication between said primary delivery port and said exhaust when said valve assembly is in an inoperative position, in which said inoperative position said secondary delivery port communicates directly with the said exhaust which is common to both braking circuits.

4,498,711

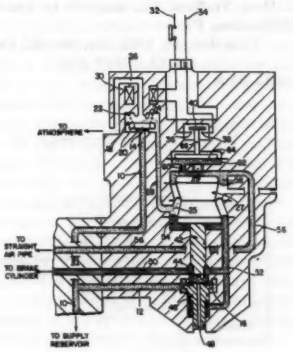
PNEUMATIC CONTROL FOR BRAKING SYSTEM PROVIDING SNOW BRAKE OPERATION

Keith W. Langley, Bath, England, and Jack Washbourn, Frazer, Pa., assignors to Westinghouse Brake and Signal, England

Filed Nov. 5, 1982, Ser. No. 439,434

Int. Cl.³ B60T *15/46*

U.S. Cl. 303—13 **10 Claims**



1. In a railway vehicle braking system of the type providing "snow brake" operation wherein light braking pressure is provided by the braking system responsive to the actuation of a controller for initiating such "snow brake" operation, a control system for controlling the initiation and termination of the "snow brake" operation comprising:

control means, actuated in response to said controller, for, when actuated, initiating "snow brake" operation;

first pneumatic valve means for controlling the braking pressure applied to the brake cylinders of the braking system and for, in a first operating mode, providing for the supply of a first, relatively low braking pressure during "snow brake" operation and for, in a second operating mode, providing for the supply of supply pipe pressure responsive to a demand for service or emergency braking; and

further pneumatic valve means, responsive to said control means and operatively connected to the first valve means, for, when actuated, causing said first valve means to operate in the first operating mode thereof absent a demand for service or emergency braking;

said first valve means further comprising means associated therewith for, responsive to a demand for service or emergency braking, (1) providing for operaion of said first valve means in the second mode thereof wherein supply pipe pressure is supplied to the brake cylinders and (2) deactuating said control means to thereby deactuate said further valve means so that the first valve means no longer provides for "snow brake" operation, and for, responsive to termination of such a demand, (3) providing full release of the pressure supplied to the brake cylinders and (4) reactuating said control means to thus reinitiate the "snow brake" operation after a predetermined time delay

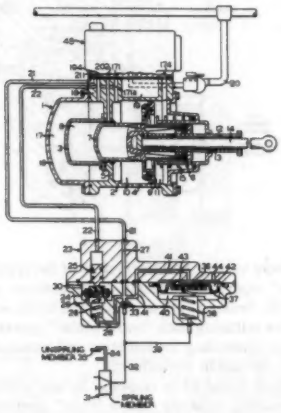
the means associated with said first valve means including a first chamber connected to receive straight air pipe pressure and a second chamber connected to said first chamber through a path providing free transfer of pressure in one direction and restricted transfer of pressure in the opposite direction, said second chamber including actuator means responsive to pressurization and de-pressurization of said second chamber for respectively deactuating and reactuating said control means whereby pressurization of the straight air pipe provides pressurization of said second chamber through said path in said one direction to provide deactuation of said control means and de-pressurization of the straight air pipe provides de-pressurization of said second chamber through said path in said other direction-to provide reactuation of said control means after said time delay.

4,498,712

EMPTY/LOAD BRAKE CONTROL ARRANGEMENT

James E. Hart, Trafford, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Jun. 16, 1983, Ser. No. 505,138
Int. Cl.³ B60T *8/18*
U.S. Cl. 303—23 R **11 Claims**



1. Fluid pressure brake apparatus for a railway vehicle operative in response to variation of fluid pressure in a brake pipe of said vehicle normally charged to a certain chosen value comprising:

(a) a brake cylinder device including at least one piston forming an application chamber and a release chamber on opposite sides thereof in which fluid pressure is normally stored at a value corresponding to said certain chosen value;

(b) control valve means including an exhaust passage operative in response to a reduction of said brake pipe fluid pressure for connecting fluid under pressure from said release chamber to atmosphere via said exhaust passage, said at least one piston being operative in response to said exhaust of fluid under pressure from said release chamber to provide a brake application force in accordance with the pressure differential between said application and release chambers;

(c) changeover valve means for sensing an "empty" condition of vehicle loading so as to interrupt said connection of fluid under pressure from said release chamber to atmosphere; and

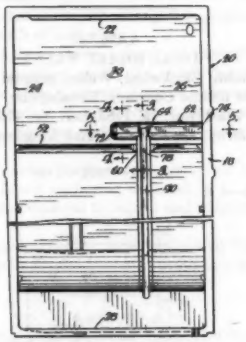
(d) check valve means for connecting said exhaust passage to atmosphere in bypass of said changeover valve means so long as the pressure in said exhaust passage exceeds a predetermined value, said predetermined value being different for different values of said normally chosen brake pipe fluid pressure.

4,498,713

THERMAL STRESS RELIEF IN REFRIGERATORS

Louis W. Fellwock, Sebastian County, Ark.; Kenneth L. Hortin, and Charles G. Fellwock, both of Scott Township, Vanderburg County, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 25, 1982, Ser. No. 436,520
Int. Cl.³ A47B *81/00*
U.S. Cl. 312—214 **12 Claims**



1. In a refrigeration apparatus having a cabinet, a plastic cabinet liner within the cabinet and defining a refrigerated space with the liner including a generally planar wall, and insulation disposed between said liner and said cabinet and having a coefficient of thermal expansion different from that of said liner, thermal stress relief means for said liner comprising:

a first stress relief rib formed in said wall member and extending thereacross;

means defining an interruption in said first stress relief rib; and

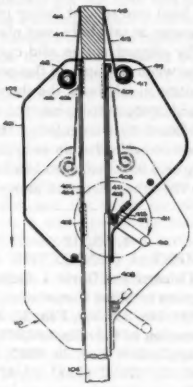
a second stress relief rib formed in said wall member and extending generally parallel to said first rib and across said interruption, whereby said first and second ribs define an effectively continuous stress relief rib across said wall member.

4,498,714

OVERHEAD RETAIL MERCHANDISING UNIT FOR CIGARETTES

Lee Wiese, Upper Nyack, N.Y., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Feb. 8, 1983, Ser. No. 464,868
Int. Cl.³ A47B *57/10*
U.S. Cl. 312—312 **9 Claims**



1. An overhead retail merchandising unit for cigarettes, comprising:

an elongated cigarette dispensing enclosure including a bottom wall, a front wall, a top wall and two side walls, and further having a plurality of generally upright passages therethrough;

a plurality of generally upright supports slidably received within said passages, each of said upright supports comprising two telescoping box beams and means for adjusting the height of said support to one of a plurality of discrete positions;

means for translating said enclosure vertically along each of said supports simultaneously to any one of an infinite number of selected heights for continuous fine adjustment after installation at one of said discrete positions; and

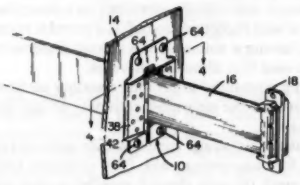
means for retaining said enclosure in a desired position relative to said supports.

4,498,715

CABLE SHIELD GROUNDING CLAMP

Michael S. Peppler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 29, 1983, Ser. No. 480,041
Int. Cl.³ H01R *4/24, 4/66*
U.S. Cl. 339—14 R **12 Claims**



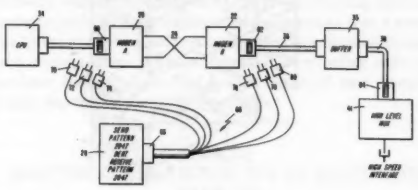
1. A clamp for securing a shielded cable to a panel, said panel having an aperture through which a cable passes and said cable having a plurality of insulated conductors enclosed within conductive shielding and an outer insulative sheath, said clamp comprising a conductive body having a central passage through which the cable extends and a pair of integral lateral flanges aligned with said central passage, a rolled edge formed on each elongated side of said passage to protect the cable, a plurality of lances and corresponding apertures formed in said clamp body and said flanges, each aperture surrounded by a plurality of tines, all said tines and said lances extending from a single face of said clamp, and means to mount said clamp on said panel whereby the insulation and shielding of said cable are secured by folding said flanges upon said body crimpingly engaging the shielding and insulation with said lances and said tines.

4,498,716

DATA MONITORING CONNECTOR FOR TESTING TRANSMISSION LINKS

Marvin W. Ward, 7838 Goldphin Dr., Springfield, Va. 22153

Filed Apr. 1, 1982, Ser. No. 364,231
Int. Cl.³ H01R *9/09*; G06F *11/30*
U.S. Cl. 339—17 R **11 Claims**



1. In an arrangement for testing data transmission links in a multiple cable, computer based system, a multiple conductor connector provided at least at one piece of equipment on one of the links to enable monitoriing of data flow during normal operation of the system, the connector comprising a housing, an electrical cable having multiple conductors extending from one end of said housing, a multiple conductor coupling including at least two rows of electrical coupling elements for connecting to corresponding conductors of a piece of equipment, a circuit board supported within said housing, said circuit board carrying a conductive pattern including conductors corresponding to said coupling elements; jumper wires for electrically interconnecting said at least two rows of coupling elements and said conductor pattern on one side of the circuit board; means for electrically interconnecting said cable conductors and said conductor pattern; and terminal means connected respectively to the conductors of said conductive pattern, which connect to said at least two rows of coupling elements, said circuit board spaced longitudinally apart from said coupling elements and said terminal means on said circuit board positioned to be accessed from a common side of said housing to monitor data signals, the connector remaining in circuit during normal operation of said system to enable continuous monitoring of said system by accessing data patterns on said link at said terminal means of said connector.

4,498,717

PRINTED WIRING BOARD INTERCONNECT ARRANGEMENT

William A. Reimer, Wheaton, Ill., assignor to GTE Communication Systems Corp., Northlake, Ill.

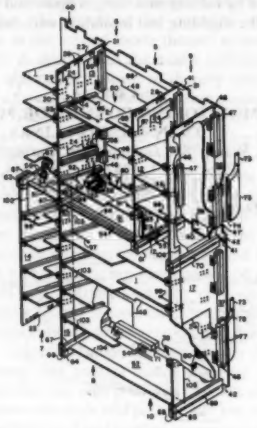
Filed Aug. 29, 1983, Ser. No. 527,636
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—17 LM **23 Claims**

1. A printed wiring board interconnect arrangement comprising:

a plurality of printed wiring boards arranged in at least first and second columns, each of said printed wiring boards, within each column, including at least a first edge, said edges within a column lying in a common plane;

at least first and second interconnect planes, each interconnect plane including at least a first and a second edge, said

interconnect plane first edges lying in a common plane, said interconnect plane second edges lying in a common plane, each of said interconnect planes positioned adjacent to a corresponding one of said printed wiring board edge common planes, and interconnecting said printed wiring boards having edges in said corresponding common plane;



a backplane positioned adjacent to said interconnect plane first edges and connecting said interconnect planes; and

at least one cross-connect board, positioned adjacent to said interconnect plane second edges and connecting said interconnect planes.

4,498,718

ELECTRICAL CONNECTORS

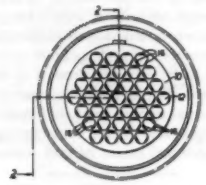
William C. W. Duncan, Bugbrooke, England, assignor to Plessey Overseas Limited, Ilford, England

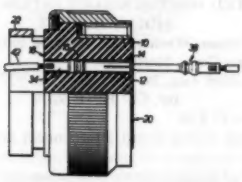
Continuation of Ser. No. 359,909, Mar. 19, 1982, abandoned. This application May 24, 1984, Ser. No. 614,376

Claims priority, application United Kingdom, Mar. 21, 1981, 8108940

Int. Cl.³ H01R *13/40*

U.S. Cl. 339—59 M **9 Claims**





1. An electrical connector comprising a cylindrical body, said cylindrical body having a one-piece insulator located therein, said one-piece insulator having a plurality of parallel circular through-bores in a closely packed array formed therein, each of said bores being formed with three circumferentially spaced inwardly projecting protuberances intermediate of its ends, each said protuberance comprising a lead-in shape gently rising from the internal surface of said bore and a retaining face perpendicular to the axis of said bore, said retaining faces of all the protuberances in said plurality of bores being in the same plane, and the edge of each protuberance forming a chord through the respective bore, an elongated cylindrical electrical contact located in each of said bores, said contact having at least two spaced flange portions of substantially the same diameter as said bore, said plurality of protuberances being radially aligned within said cylindrical body and being positioned between said spaced flange portions to locate said contact in position in said bore, the shape of said protuberances permitting said contacts to be inserted and removed from either end of said bores by triangulating the respective bore during insertion or removal wherein insertion and removal in one direction along said bores requires less force than insertion and removal from the other direction along said bores.

4,498,719

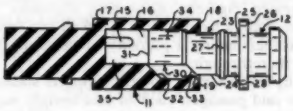
ENVIRONMENTAL CONNECTOR ASSEMBLY

Mitchell A. Juris, Chicago, and David A. Gallagher, Romeoville, both of Ill., assignors to Allied Corporation, Morristown, N.J.

Continuation of Ser. No. 236,369, Feb. 20, 1981, abandoned, which is a continuation of Ser. No. 864,975, Dec. 27, 1977, abandoned. This application Nov. 30, 1982, Ser. No. 445,403

Int. Cl.³ H01R *13/52, 13/627*

U.S. Cl. 339—60 R **3 Claims**



1. A connector assembly for coupling a first elongate termination element for a signal communication conductor to a second elongate termination element for a signal communication conductor comprising:

an elongate receptacle member having a longitudinal axis and a forward end portion having a forward extremity which is open for receiving a mating plug member and a rearward end portion rearward of said forward end portion for receiving a signal communication conductor,

said receptacle member including a cylindrical recess within said forward end portion defined by a continuous resilient annular wall element having an internal diameter adjacent the forward extremity of said forward end portion of a first dimensional value,

said wall element terminating at the plug receiving extremity of said forward end portion in a continuous circumferential lip integral at its base with the inner surface of said wall element and radially extending in a direction toward the axis of said receptacle to define a circular recess access opening having a diameter of a second dimensional value less than said first dimensional value,

said lip being contoured to provide a sealing surface thereon defined around the innermost extremity of said lip relative to said axis,

said receptacle including means within said rearward end portion for supporting said first elongate termination element with the axis thereof parallel to said receptacle member axis,

an elongate plug member having a longitudinal axis and a first end portion having a mating face at its forward extremity for mating with said receptacle member and a second end portion disposed rearwardly of said first end portion for receiving a signal communication conductor with means within said plug member for supporting said

second elongate termination element with its axis parallel to the axis of said plug member,

the first end portion of said plug being comprised of four cylindrical longitudinally contiguous sections, the first and forwardmost of said sections having a diameter no greater than said second dimensional value to define a neck portion, the second of said sections having a maximum diameter larger than said second dimensional vaue to define a collar portion, the third of said sections having a maximum diameter not less than said second dimensional value to define a sealing surface portion, and the fourth of said sections having a maximum diameter greater than said first dimension to define a shoulder portion for abutting against the forward extremity and limiting longitudinal entry of the plug into the recess to determine fully mated condition of said receptacle and plug members,

the relative and aggregate longitudinal lengths of said first, second and third sections combined being such that when said plug is fully mated within said receptacle said lip sealing surface effects a seal against said plug sealing surface portion, and the outer periphery of said collar portion effects a seal against the inner surface of said annular wall element, the inner surface of said annular wall element being relatively smooth and of substantially uniform diameter over a longitudinal distance extending rearwardly from the rear extremity of said lip to a position sufficiently beyond the forwardmost extremity of said collar when said receptacle and plug members are in fully mated condition to allow said shoulder portion to act as a stop against which the forward extremity abuts when said receptacle and plug member are in said fully mated condition, in which said condition, the uniform diameter annular wall element surrounds said neck portion for a longitudinal distance at least as great as the maximum longitudinal extent of said collar.

4,498,720

FLAT PACK WITH HOUSING DEFORMATION PREVENTION MEANS

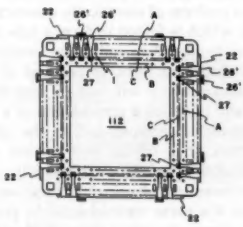
Yoshiaki Ichimura, Tokyo, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed May 23, 1983, Ser. No. 496,847

Claims priority, application Japan, May 26, 1982, 57-87897; May 26, 1982, 57-87898

Int. Cl.³ H01R 9/09

U.S. Cl. 339—75 MP **11 Claims**



1. In an electrical connector for mounting a first electric circuit board having terminal pads onto a second electric circuit board having conductor elements and electrically connecting the terminal pads with the conductor elements, said terminal pads being arranged along a peripheral edge of the first electric circuit board, said connector including an insulator housing having a top surface for receiving said first electric circuit board and a bottom surface to be opposite to said second electric circuit board, a plurality of contact elements each having a spring contact portion at one end thereof and a terminal pin portion at the other end thereof, said contact elements being mounted in, and arranged along a peripheral edge of, said insulator housing so that said spring contact portions extend to engage with respective terminal pads of the first circuit board received on said insulator housing while said terminal pin portions protruding from the bottom surface of said insulator housing to electrically connect with said conductor elements of said second electric circuit board, and clamping means for clamping said insulator housing and said first electric circuit board received thereon to press said terminal pads onto said spring contact portions, the pressure applied to each spring contact portion acting onto, and being supported by, said insulator housing through each contact element, the improvement which comprises said clamping means including upper means to engage with, and depress, the upper surface of said first electric circuit board received on said housing, lower means to engage with the bottom surface of said insulator housing, and connecting means connecting said upper means and said lower means, said lower means engaging with the bottom surface of said housing in the vicinity of an imaginary line on which the bottom surface of said insulator housing intersects with a line of action of the pressure acting onto said insulator housing from each contact element so that a torque due to the pressure acting onto said insulator housing through each contact element and a clamping force acting onto said insulator housing from said lower means of said clamping means may be substantially cancelled.

4,498,721

ELECTRICAL CONNECTOR FOR AN ELECTRONIC PACKAGE

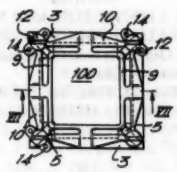
Petrus R. M. van Dijk, Hertogenbosch, Netherlands, assignor to AMP Incorporated, Harrisburgh, Pa.

Filed Aug. 15, 1983, Ser. No. 523,504

Claims priority, application United Kingdom, Sep. 16, 1982, 8226446

Int. Cl.³ H01R 9/09

U.S. Cl. 339—75 MP **3 Claims**



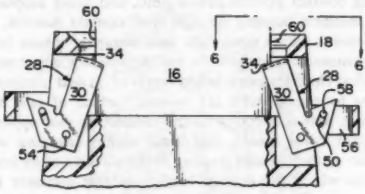
1. An electrical connector for mounting a planar leadless electronic component package on a substrate, comprising a housing of electrically insulating material carrying a plurality of electrical contacts providing first contact points for engagement with conductors on the package and second contact points for engagement with conductors on the substrate, and a lid which when connected to the housing in a closed condition serves to urge a package mounted on the housing, into contact with the first contact points of the contacts, and to secure the package to the connector, characterised in that the housing is formed at its periphery with a plurality of holes each to receive a bolt by which the connector is to be secured to the substrate, the lid being in the form of a spring member having a plurality of forked portions engageable under the heads of respective bolts when securing the connector to the substrate and having hold-down portions resilient relative to the forked portions and arranged to engage the package and hold the package on the housing said lid being comprised of an inner planar frame formed by side strips which in use serve as package hold-down portions, each side strip carrying outside the frame a pair of oppositely extending arms which extend parallel to the side strip and upwardly relative to the plane of the frame, adjacent free end portions of the arms together constituting the forked portions engageable under the heads of the bolts.

4,498,722

LATCH DEVICE FOR ZIF CARD EDGE CONNECTORS

James L. Fedder, and Michael A. Kandros, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 5, 1983, Ser. No. 557,977
Int. Cl.³ H01R *13/631*
U.S. Cl. 339—75 MP 2 Claims



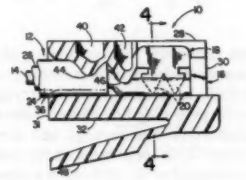
1. A latch device located at each end of a card receiving slot in a card edge connector of the type having a vertically moving upper housing, said device comprising a pair of spaced apart L-shaped sides connected at the lower ends and having turned in flanges at the upper ends of the elongated sections with the edges thereof defining a V-groove to receive there between the side of the card, and diagonal slots located in the short perpendicular sections of the sides, said device being pivotally mounted by a pin extending thru holes in the elongated sections and anchored in a non-movable part of the connector and with a pin passing thru the diagonal slots and anchored to the movable upper housing so that as the upper housing moves upwardly, the upper ends of the device move in towards the card receiving slot so that the side of a card which may be in the slot is gripped by the edges defining the V-groove.

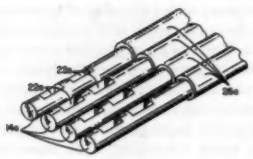
4,498,723

ELECTRICAL CONNECTOR AND METHOD FOR TERMINATING SOLID CONDUCTORS

James J. Johnston, Old Saybrook, Conn., assignor to Brand-Rex Company, Willimantic, Conn.

Filed Dec. 23, 1982, Ser. No. 452,780
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—97 P 28 Claims





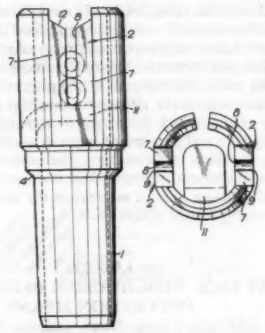
11. An article of manufacture comprising a plurality of solid electrical conductors having end portions disposed in closely spaced parallel relation to each other, each of said end portions having at least one pre-formed tine receiving opening therein, a plurality of electrical contacts, each of said contacts having at least one tine thereon, each of said contacts being assembled with an associated one of said solid conductors and having said one tine disposed within said one pre-formed opening in said one conductor and in press fit relation to said one conductor.

4,498,724

CIRCUIT BOARD COMPOSITE CONNECTOR

Cyril J. White, Chandlers Ford, and Christopher Joyce, Middenbury, both of England, assignors to Bicc Public Limited Company, London, England

Continuation of Ser. No. 303,509, Sep. 18, 1981, abandoned. This application Mar. 7, 1984, Ser. No. 587,309
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—97 R 10 Claims



1. A composite connector for use with a circuit board of the kind comprising a board of electrically insulating material, which board has bonded to one of its surfaces a regular pattern of strips of electrically conductive metal or metal alloy and has, extending through the board and the overlying electrically conductive metal strips, a multiplicity of holes distributed at spaced positions along the strips, which composite connector is formed from a preform of electrically conductive sheet metal or metal alloy which is folded to form a tube having an open seam extending from end to end of the composite connector and which is shaped to form, at one end of the composite connector, a socket which will make a snap-fit in a hole in a circuit board and in which a terminal pin of a circuit component can be resiliently gripped and, at the other end of the composite connector, a tubular end portion of substantially circular cross-section having longitudinally extending slots which are at substantially diametrically opposed positions and whose axes lies in a plane transverse to the plane common to the axes of the composite connector and of said seam, each of which slots open into that end of the composite connector and is bounded by marginal portions of said tubular end portion, which marginal portions and the slot bounded thereby constitute the limbs and an insulated wire-receiving opening of a bifurcated contact, the limbs of each bifurcated contact having opposed faces which, over at least a major part of their widths, are substantially flat and lie substantially parallel to the transverse plane common to the axes of the diametrically opposed slots, the arrangement being such that, when a length of insulated wire is introduced into the opening between the limbs of each bifurcated contact, the limbs will displace the insulating covering of the wire to effect an electrical connection with the wire at at least two positions spaced along its length.

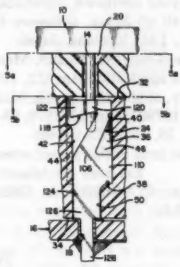
4,498,725
ELECTRICAL CONNECTOR

Edward J. Bright, Elizabethtown; Gary R. Marpoe, Jr., Hummelstown, both of Pa.; Klaus D. Schuemann, Los Gatos, Calif., and Wilmer L. Sheesley, Dauphin, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 384,359, Jun. 2, 1982, abandoned. This application Jun. 14, 1984, Ser. No. 619,641

Int. Cl.³ H01R *11/22, 13/629*

U.S. Cl. 339—176 M 2 Claims



1. An electrical connector comprising a housing in which a plurality of contact elements are positioned, said elements having a pair of generally converging, horizontal fingers in between which a pin from an electronic device is laterally inserted, characterized in that the fingers are attached to upper ends of vertically extending, parallel arms such that each arm and attached finger define a figure seven shape, the arms being attached at their lower ends to a channel-shaped strap and being of sufficient length such that, upon laterally inserting a pin in between the fingers and thereby spreading them apart, the arms are twisted about their vertical axis to exert a torsional force against the inserted pin.

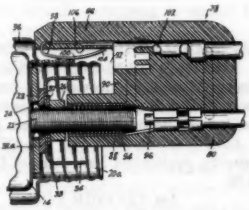
4,498,726
CONNECTOR RECEPTACLE FOR ELECTRIC CIGAR LIGHTER

Donald J. Mattis, Norwalk, Conn., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,159

Int. Cl.³ H01R *13/50*

U.S. Cl. 339—182 R 16 Claims



1. A dual-contact electrical connector receptacle for bringing current to an automotive vehicle's electric cigar lighter, said lighter being of the type having an ignitor-plug receiving socket with an annular electrically-conductive current-carrying sleeve at its inner end, said sleeve being electrically connected to the ground side of the cigar lighter circuit, said socket further having a central terminal post connected to the hot side of the cigar lighter circuit, the receptacle comprising in combination:

(a) a non-tubular, slab-like body of molded insulating material,

(b) said body having a pair of expansive, opposite, exteriorly exposed grip surfaces to facilitate manual engagement by an installer,

(c) said body comprising a U-shaped portion having two legs and a connecting yoke, the space between said legs providing clearance for said annular sleeve of the cigar lighter socket when the connector receptacle is installed thereon,

(d) at least one of said legs having a recess,

(e) a resilient tubular contact terminal disposed in and held captive by the walls of the recess, said terminal being slidable onto the central terminal post of the cigar lighter socket,

(f) a resilient spring contact finger carried by the other of said legs and having a bowed body portion extending into said space between the legs, the center of the bowed body portion being cooperable with and closely juxtaposed to one surface of the annular sleeve of the cigar lighter socket, and being adapted to provide a current path thereto when the receptacle is installed thereon, and

(g) a pair of electrical leads connected respectively with said tubular contact terminal and said spring contact finger, for connection to the vehicle's electrical system,

(h) said tubular contact terminal and spring contact finger being generally coextensive with one another and the force of the sleeve acting against the spring contact finger being balanced by a counteracting force of the central post acting on the tubular contact terminal, thereby to maintain adequate pressure between the contact finger and sleeve.

4,498,727
ELECTRIC CONNECTING MEANS

Anthony Steinmetz; Jacobus J. Arnold; Fransiscus G. C. Verweg, and Hendrik Groeneboer, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,267

Claims priority, application Netherlands, Mar. 17, 1980, 8001555

Int. Cl.³ H01R *3/00*

U.S. Cl. 339—278 C 2 Claims

1. An electrical connector particularly suitable for use in low-voltage applications, said connector comprising an electrically insulating body and electrical conductors extending from said electrically insulating body characterized in that each of said electrical conductors comprises a substrate of a base metal readily oxidizable in air, an intermediate 0.1–2 μm thick gold layer on said substrate and an outer layer on said gold intermediate layer consisting of a mixture having a paste-like consistency of a binder selected from the group consisting of greases, oils and waxes and approximately 10–50% by weight of electrically conductive particles of a hardness in excess of any metal oxide capable of being formed by oxidation in air of said base metal and of a minimum diameter at least equal to the thickness of any layer capable of being formed by said oxide of said base metal.

4,498,728

OPTICAL ELEMENT

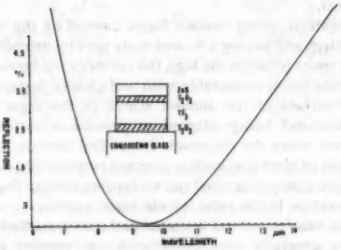
Werner Thöni; Peter Huber, both of Maienfeld, Switzerland, and Karl Hohenegger, Balzers, Liechtenstein, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Mar. 1, 1983, Ser. No. 470,922

Claims priority, application Switzerland, Mar. 1, 1982, 1234/82

Int. Cl.³ G02B *5/28*

U.S. Cl. 350—1.7 **3 Claims**



1. An optical element comprising a system of a plurality of infrared transmitting, optically effecting thin layers of substances of the group: germanium, zinc selenide, zinc sulfide, chalcogenide glasses, thorium fluoride, yttrium fluoride, and praseodymium fluoride, applied to an infrared transmitting substrate of a material of the group: germanium, zinc selenide, zinc sulfide, and chalcogenide glasses, an intermediate layer having a thickness of 100 nm at most, of a material of the group; hafnium oxide, yttrium oxide, and scandium oxide is provided between the substrate and the optically effective layer adjacent thereto.

4,498,729

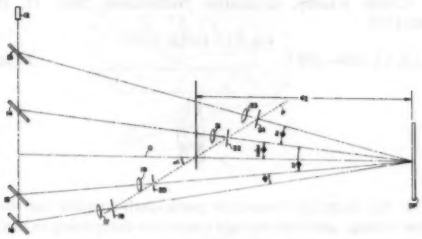
METHOD AND APPARATUS FOR MAKING ACHROMATIC HOLOGRAMS

Stephen A. Benton, Somerville, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 13, 1979, Ser. No. 66,303

Int. Cl.³ G03H *1/20*

U.S. Cl. 350—3.69 **7 Claims**



1. The process of making a hologram for the display of achromatic images comprising the steps of: arranging a multiply imaging diffractor plate between a first hologram of an object formed on a first photographic plate and a second photographic plate; illuminating a narrow elongated strip of said first hologram with monochromatic light in a first object beam conjugate to the reference beam with which the said first halogram was made while illuminating said second photographic plate with a first reference beam of light coherent with said first object beam; processing said second photographic plate to make a second hologram; arranging a third photographic plate adjacent said second hologram in position to record an image formed by said second hologram; illuminating said second hologram with a second object beam of monochromatic light conjugate to said first reference beam while illuminating said third photographic plate with a second reference beam coherent with said second object beam; and processing said third photographic plate to make a third hologram.

4,498,730

OPTICAL SWITCHING DEVICE

Tsutomu Tanaka, Nishinomiya; Yoshinobu Tsujimoto, Kashihara; Hiroyuki Serizawa, Hirakata, and Katsuji Hattori, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

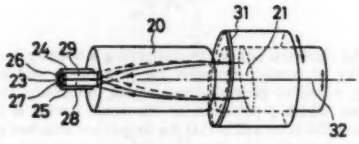
Continuation of Ser. No. 18,243, Mar. 7, 1979, Pat. No. 4,304,460. This application Apr. 22, 1981, Ser. No. 256,617

Claims priority, application Japan, Mar. 10, 1978, 53-028150; Sep. 1, 1978, 53-107903; Sep. 20, 1978, 53-116427; Sep. 20, 1978, 53-116428; Dec. 25, 1978, 53-165665

The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.

Int. Cl.³ G02B *5/16*; G02F *1/00*

U.S. Cl. 350—96.16 **48 Claims**



1. An optical switching device comprising:

a focussing lens,

a plurality of optical waveguides having respective end faces disposed on a focal plane of said focussing lens,

reflection means disposed at an end of said focussing lens furthest from the focal plane thereof for reflecting rays incident thereupon, and

means for controllably moving said reflection means, the movement being a rotation about a central axis thereof, rays issuing from one of said end faces and transmitted through said focussing lens being controllably reflected by said reflection means in selected directions, including at least a specified direction to enter selectively into at least one respective end face other than the end face from which said rays issued.

4,498,731

OPTICAL WAVEGUIDE BRANCH COUPLER AND METHOD OF MANUFACTURING

Gerhard Winzer, Munich, and Romuald V. Tomkewitsch, Ebenhausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 30, 1983, Ser. No. 480,318

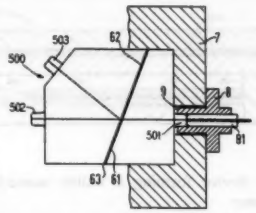
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1982, 3212619

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.16 **26 Claims**

1. A method of forming a body having at least one cylindrical guide plug projecting from an outer surface concentrically receiving an optical waveguide extending into said body, said method comprising the steps of providing a first part and a second part, said first and second parts each having a lateral planar surface extending at right angles to an outer surface of the part to an opposite edge, said outer surface of each part having at least one projection having a surface in the plane of the lateral surface and a shape of approximately one-half of the cylindrical guide plug, at least one of the first and second parts having a guide groove for each of the semi-cylindrical projections extending inward at right angles to the outer surface to

the opposite edge of the lateral surface, said first and second parts having adjustment means comprising coacting recesses and projections for guiding the first and second parts as they are assembled with their lateral surface engaging and with the projections being matched to form a cylindrical guide plug; providing an optical waveguide in each of the guide grooves of



the one part, assembling the first and second parts together with the lateral surfaces engaging each other and the projections being received in the recesses to insure that the semi-cylindrical projections of the parts are matched to form the cylindrical guide plugs with the coaxially positioned waveguide, and securing the two parts together to form the body.

4,498,732

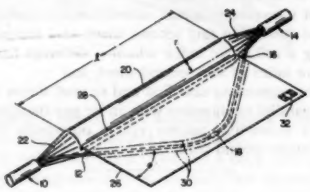
FIBER OPTIC SPLICE ORGANIZER

Bruce D. Campbell, Portola Valley, and Vernon A. Fentress, Castro Valley, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 339,275, Jan. 15, 1982, abandoned. This application May 25, 1982, Ser. No. 381,825

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.20 **29 Claims**



1. A device for helically wrapping an optical fiber about a cylindrical core, comprising:

(a) a cylindrical core having a radius of which is less than the minimum bending radius of said fiber

(b) a sheet of flexible material, which sheet is attached longitudinally to said core along one edge of the sheet, and is wrapped around said cylindrical core, said optical fiber being arranged on said sheet such that when said sheet is wrapped about said core a minimum helical pitch angle, θ, of said fiber is determined from $r' = r/\cos\theta$ where r' is the minimum bending radius of the fiber and r is the radius of the core.

4,498,733

REFLECTOR STRUCTURE

Robert M. Flanagan, Lincolnshire, Ill., assignor to Amerace Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,696

Int. Cl.³ G62B *5/122*

U.S. Cl. 350—102 **14 Claims**

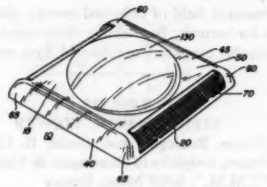
1. A pavement marker for providing a marking signal on a roadway surface capable of resisting impact forces exerted by vehicle tires impinging thereon and reflecting light back toward the source thereof, so as to be visible to a driver in an approaching vehicle, said pavement marker comprising:

a base having at least one support surface positioned in use in the direction of an approaching vehicle;

a lens member of light-transmitting synthetic resin having a front face and a rear face, said lens member being carried by said support surface;

said lens member having a plurality of cube-corner tye retrodirective reflector elements integrally formed in said rear face and extending outwardly therefrom;

each of said reflector elements being individually sur-



rounded by a continuous peripheral wall, said walls extending between the plane of said rear face and said support surface, said peripheral walls defining individual cells round each said individual reflector elements, thereby forming an impact resistant structure;

the ratio between the maximum dimension of each said reflector element in plan view and the thickness of an adjacent peripheral wall being no less than about 2 to 1

said reflector elements being positioned and arranged to reflect light falling upon said front face of said lens member back toward the source thereof to render said marker highly visible at night.

4,498,734

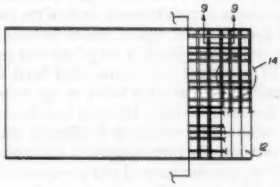
MEANS AND METHOD OF CONTROLLING REFLECTED IMAGE CONTAINMENT

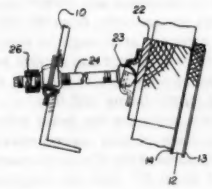
Agis I. Mihalakis, deceased, late of San Luis Obispo County, Calif., and by Barbara L. Friend, legal representative, Cody, Wyo., assignors to William C. McGeehon and George Mihalakis, a part interest

Filed Sep. 13, 1982, Ser. No. 417,709

Int. Cl.³ G03B *21/56*

U.S. Cl. 350—125 **16 Claims**





1. Means for adjusting an optical reflecting surface and the energy falling incident thereon, comprising:

a. a rigid mounting structure;

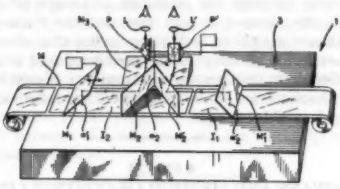
b. a flexible multi-panel structure disposed in front of the mounting structure;
c. means forming a reflection surface on the flexible multi-panel structure for a preselected field of reflected energy distribution;
d. a plurality of connecting means spaced in accordance with a preselected pattern and extending between the mounting structure and the flexible structure, each connecting means being individually extendable and retractable to effect adjustment in the position of a corresponding region of the flexible multi-panel structure whereby the flexible multi-panel structure may be effectively curved to change the presented field of reflected energy distribution; and
e. means for securing the flexible multi-panel structure once the desirable curvature is achieved, thus rendering it rigid.

4,498,735

STEREOSCOPIC VIEWER

Herve R. Gresse, Boulogne, and Annick R. Carn, Versailles, both of France, assignors to Compagnie de Materiel de Micrographie "C.M.M.", Saint Maur, France

Filed Jul. 2, 1982, Ser. No. 394,841
Claims priority, application France, Jul. 8, 1981, 8113384
Int. Cl.³ G02B *27/22*
U.S. Cl. 350—138 **4 Claims**



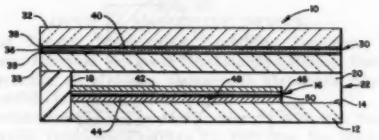
1. A stereoscopic viewer for aerial photographs, said viewer being intended to be located over a flat translucent support across which a film to be examined is unwound flatly, suitable lighting being arranged below said flat translucent support, said viewer comprising: optical means to examine simultaneously, through two eyepieces, two successive panoramic images in a film of panoramic exposures, said optical means defining an optical path between each of the two images and its relevant eyepiece; said optical means including, for each optical path, on the one hand, a set of mirrors providing an odd number of reflections and, on the other hand, a total-reflection prism; each said prism each being in the form of an isosceles triangle and each having a base and two faces, said base being the side where total reflection is effected, each said base extending substantially perpendicularly to the plane of the film to be examined, and said bases of said prisms extending at an angle of about 90° to one another; one of said bases lying in a plane extending perpendicular to the plane of the film to be examined, the set of mirrors being arranged between the two prisms and the film to be examined and comprising, for each of the two optical paths, successively, from the film to be examined;
a first mirror arranged at an angle of about 45° to the plane of the film to be examined and at right angles to the longitudinal plane of symmetry of the film, the reflecting surface of said mirror facing said film;
a second mirror receiving the beam reflected by the first mirror, the plane of said second mirror being at right angles to the plane of the film to be examined and forming an angle of about 45° with the longitudinal axis of said film;
and a third mirror reflecting the beam arriving from said second mirror and passing it to the inlet face of one of the two prisms.

4,498,736

METHOD AND APPARATUS FOR PRODUCING VISUAL PATTERNS WITH LENTICULAR SHEETS

Robert B. Griffin, 282 Tunxis Rd., West Hartford, Conn. 06107

Filed Feb. 2, 1981, Ser. No. 230,862
Int. Cl.³ G02B *27/00*
U.S. Cl. 350—167 **11 Claims**



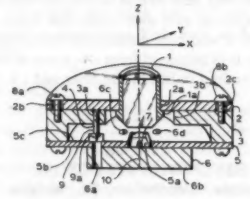
1. A display device forming a visible moire-like optical pattern comprising:
a first lenticular sheet adapted for cooperation with a corresponding second lenticular sheet to form a visible moire-like optical pattern, said first sheet bearing a pattern of closely spaced lens-like embossments on a first surface thereof, the opposed second surface of said first sheet being smooth;
a second lenticular sheet adapted for cooperation with said first lenticular sheet to form a visible moire-like optical pattern, said second sheet being transparent and bearing a pattern of closely shaped lens-like embossments on a first surface thereof, the opposed second surface of said second sheet being smooth;
a first transparent optical intensification coating on said first surface of said second sheet, said first coating filling the spaces between said lens-like embossments and being of sufficient thickness to cover said embossments, said first coating having an outer surface, said first coating having a refractive index which is different than the refractive index of said second sheet;
a second transparent optical intensification coating on said second surface of said second sheet, said second coating having a refractive index which is different than the refractive index of said second sheet; and
means for supporting said first and second sheets in spaced apart parallel relationship with an air gap therebetween to form a moire-like pattern visible outwardly from said transparent second sheet.

4,498,737

ADJUSTING MECHANISM FOR USE WITH DIODE LASERS

David E. Doggett, Cupertino, Calif., assignor to Benson Inc., San Jose, Calif.

Filed Feb. 26, 1982, Ser. No. 352,816
Int. Cl.³ G02B *7/00*
U.S. Cl. 350—237 **11 Claims**



1. Structure for adjusting the position of a solid state laser diode along the optical axis of a lens system comprising:
first means for holding the lens system;
second means for holding the laser diode spaced relative to said lens system along said optical axis;
securing means for attaching the first means to the second

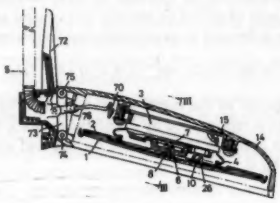
means at two points, said points being spaced from the laser diode and substantially on opposite sides thereof; and means mounted between said laser diode and one of said points for adjusting the position of the laser diode relative to said lens system along the optical axis of said lens system without any appreciable movement of the laser diode transverse to the optical axis.

4,498,738

ELECTRIC MIRROR ANGLE ADJUSTING DEVICE WITH PIVOTING CROSS-SHAPED MEMBER

Toshiyuki Kumai, Fujieda, Japan, assignor to Murakami Kaimeido Co., Ltd., Shizuoka, Japan

Filed Feb. 23, 1982, Ser. No. 351,469
Claims priority, application Japan, Feb. 24, 1981, 56-024834
Int. Cl.³ G05G *7/00, 1/00;* G02B *8/05*
U.S. Cl. 350—637 **5 Claims**



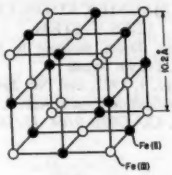
1. An electric mirror angle adjusting device comprising:
a mirror having a front and a back face
a mirror holder having a front and a back face said mirror holder being mounted on the back face of said mirror,
a stationary supporting pivot provided on the back face of said mirror holder,
an actuator unit including a housing pivotably connected to said mirror holder at the back face thereof, two actuators, two worm mechanisms respectively driven by said actuators, two pivot screws respectively disposed within worm wheels in said worm mechanisms, and adjusting nuts each having a movable pivot, each said adjusting nut being respectively moved forward or backward by rotation of said pivot screw engaged therewith, and
a guide means for controlling the direction of horizontal and vertical inclination of said mirror, said mirror holder being movable under the control of said guide means about said stationary supporting pivot, said guide means comprising a cross-shaped member disposed on said actuator unit housing, having adjacent its center a spherical bearing having an inner surface into which said stationary supporting pivot is fitted, and an outer surface, said cross-shaped member extending along the horizontal and vertical axes of said mirror, and a cross-shaped groove provided on the back face of said mirror holder pivotably engaging said cross-shaped member, the said outer surface of said spherical bearing being supported by internal members of said cross-shaped groove which abut said outer surface of said spherical surface.

4,498,739

ELECTROCHROMIC DISPLAY DEVICES USING IRON(III) HEXACYANOFERRATE(II) SALT

Kingo Itaya, Tagajo; Kimio Shibayama; Shinobu Toshima, both of Sendai; Tatsuaki Ataka, and Koji Iwasa, both of Tokyo, all of Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed May 25, 1982, Ser. No. 381,800
Claims priority, application Japan, May 26, 1981, 56-79911; Oct. 2, 1981, 56-156971; Dec. 7, 1981, 56-196623
Int. Cl.³ G02F *1/01;* C25D *11/00;* C25B *11/04*
U.S. Cl. 350—357 **28 Claims**



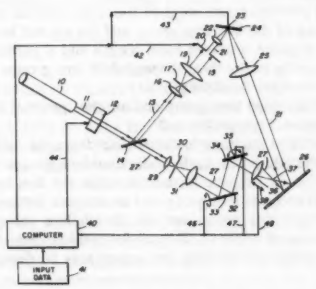
1. In an electrochromic display device: a pair of spaced-apart substrates; an electrolyte contained between the spaced-apart substrates; a set of electrodes disposed on at least one of the substrates in contact with the electrolyte; a layer of electrochromic material disposed on at least one of the electrodes to define a display electrode, the layer of electrochromic material comprising a color-reversible salt of iron(III) hexacyanoferrate(II) electrodeposited on the surface of the display electrode as an intimately adhering blue insoluble solid film; and means for effecting reversible electrochemical oxidation and reduction of the salt of iron(III) hexacyanoferrate(II) to effect a corresponding reversible color change exhibited by the display electrode.

4,498,740

HOLOGRAM WRITER AND METHOD

H. John Caulfield, Nagog Woods, Mass., assignor to Aerodyne, Research, Inc., Billerica, Mass.

Filed Apr. 18, 1983, Ser. No. 485,828
Int. Cl.³ G03H *1/08*
U.S. Cl. 350—3.66 **9 Claims**



1. Apparatus for hologram writing to record individual x, y, z data points on a holographic medium comprising
means to support a holographic medium,
means to generate coherent radiation and to form an information beam and a reference beam of said coherent radiation,
means to modulate said information beam comprising to x, y, z data,
means to focus said information beam at beam focal points at z positions adjacent to said holographic medium on said

support means and to present said beam to said holographic medium in individual areas, each corresponding to a fraction of the total area of said medium,

means to move said information beam across and along said holographic medium at positions corresponding to x, y, z data positions, and

means to present said reference beam to said holographic medium in interference with said information beam and to move said reference beam across and along said medium in conjunction with and in interference with said information beam.

4,498,741

COMPACT, WIDE MAGNIFICATION-VARIABLE ZOOM LENS SYSTEM

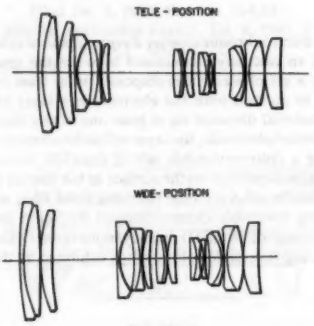
Shozo Ishiyama, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,257

Claims priority, application Japan, Apr. 3, 1981, 56-49346

Int. Cl.³ G02B *9/64, 15/18*

U.S. Cl. 350—427 **20 Claims**



1. A compact, wide magnification-variable zoom lens system comprising a first lens group having a positive focal length, a second lens group having a negative focal length, a third lens group having a positive focal length, a fourth lens group having a negative focal length and a fifth lens group having a positive focal length in the order from the object side, characterized in that

(1) over the entire range of zooming, a partial system consisting of the first lens group and the second lens group has a negative resultant focal length and a partial system consisting of the third through fifth lens groups has a positive resultant focal length;

(2) the third lens group and another positive lens group are moved integrally; and

(3) when zooming is carried out from the wide position to the tele position, the individual lens groups are moved so that an airspace formed between the first lens group and the second lens group and an airspace formed between the third lens group and the fourth lens group may be increased while an airspace formed between the fourth lens group and the fifth lens group may be decreased.

4,498,742

ILLUMINATION OPTICAL ARRANGEMENT

Makoto Uehara, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 416,029

Claims priority, application Japan, Sep. 10, 1981, 56-141677; Mar. 18, 1982, 57-43395

Int. Cl.³ G02B *21/06*

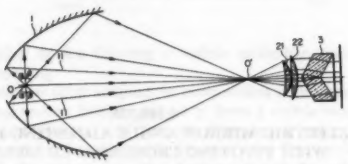
U.S. Cl. 350—523 **9 Claims**

1. An illumination optical arrangement comprising:

(a) light source means for supplying a substantially collimated light beam; and

(b) optical means for shifting the collimated light beam from said light source means toward the central axis of said light beam, said optical means including an entrance surface axis-symmetrically disposed with a predetermined inclination with respect to said central axis to cause said collimated light beam to be refracted toward said central axis substantially at the same angle, and an exit surface axis-symmetrically disposed with said predetermined inclination with respect to said central axis to cause the light beam from said entrance surface to be refracted in a direction parallel to said central axis,

wherein said optical means includes a prism having said entrance surface and exit surface, said entrance surface



is formed by a conical convex surface, said exit surface is formed by a conical concave surface, and the cones of said entrance surface and exit surface have their apexes lying on said central axis, and wherein said light source means supplies a collimated light beam having an annular distribution of quantity of light having a circular dark area of radius D_s around said central axis, and said prism is formed so as to satisfy the following condition:

$$(D_s/2) \leqq d \tan((\pi/2) - \sin^{-1}(\cos\theta/n) - \theta) \leqq 2D_s,$$

where the apexes of the cones are represented by 2θ, the refractive index is represented by n, and the distance between the apexes of the cones of the entrance surface and exit surface is represented by d.

4,498,743

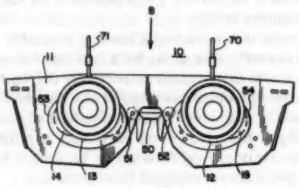
BINOCULAR FIELD OF VIEW SIMULATOR

William Feinbloom, New Paltz, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,489

Int. Cl.³ G02C *7/16*

U.S. Cl. 351—45 **16 Claims**



1. A binolcular field of view simulator for simulating a reduced peripheral field of view for a normal user, comprising:

a spectacle type frame adapted to be worn by said user,

first and second tubular assemblies positioned on the front surface and extending outwardly therefrom of said frame and each associated with an eye of said user to allow said user to view via said tubular assemblies each of said tubular assemblies being cylindrical and of a uniform circular cross section, and

means coupled to said tubular assemblies at an end remote from the front surface of said frame for selectively adjusting the field of view between 5 to 15 degrees according to the reduced peripheral field of view simulated to thereby simulate a restricted angular field of view as that associated with a visual defect.

4,498,744

METHOD OF AND APPARATUS FOR PRODUCING A PHOTOGRAPH OF A MOBILE SUBJECT

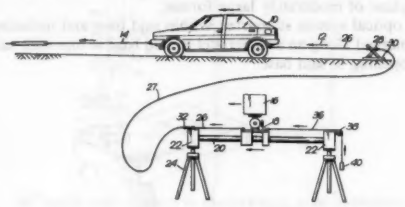
George D. Ealovega, Marley Lodge, Marley Heights, Haslemere, Surrey GU27 3LU, and Peter J. Langridge, 31 Southlands Close, Ash, Aldershot, Hants, both of England

Filed Jul. 26, 1982, Ser. No. 401,973

Claims priority, application United Kingdom, Jul. 28, 1981, 8123179

Int. Cl.[3] A63J 5/00

U.S. Cl. 352—89 2 Claims



1. Apparatus for use in producing a photograph of a mobile subject such as a vehicle, comprising a support, a camera mount adapted to have a camera secured thereto, means mounting said camera mount for linear translational movement along said support in a predetermined direction, means for detecting linear displacement of a subject in said predetermined direction, and means for imparting linear displacement to the camera mount in said predetermined direction, along said support, in correspondence with a sensed displacement in said predetermined direction of the subject, wherein said means for detecting displacement of the subject includes a displacement transducer for producing an output signal indicative of the amount of the displacement of the subject relative to a fixed reference, means for receiving said signal and effecting a corresponding displacement of the camera mount along said support, the last-mentioned means including motor means for displacing the camera mount, and control means for receiving said signal and controlling said motor means to produce the appropriate displacement, said control means including a second displacement transducer for sensing movement of said camera mount along said support, and comparator means for comparing the displacements, sensed by said transducers, of the subject and the camera mount, and for controlling the energisation of said motor means in such a way as to tend to minimise differences in said displacements of the subject and the camera mount, each said displacement transducer comprising a first part, incorporating an optical grid, with a series of markings extending thereacross at regular intervals therealong, and a second part incorporating an electrical-optical sensor, and means mounting one of said parts for linear movement relative to the other to traverse the sensor along the grid to cross said markings in succession, to cause said sensor to produce a corresponding succession of electrical pulses, the apparatus including a respective counter, associated with each said sensor, for counting the signals produced thereby.

4,498,745

DEVICE TO CORRECT THE MALFUNCTION IN FILM FEED OF A PERFORATED FILM THROUGH A LIGHT BEAM

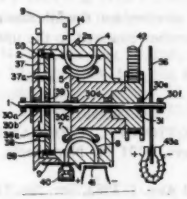
Viktor DeJeney, 6323 64th St., Riverdale, Md. 20737

Continuation-in-part of Ser. No. 292,702, Aug. 13, 1983, abandoned. This application May 23, 1983, Ser. No. 497,120

Int. Cl.[3] G03B 41/04

U.S. Cl. 352—119 8 Claims

1. A device for correcting malfunctions of film feed in non-intermittent type motion picture projectors where said film is provided with regularly spaced transparent apertures, comprising: a hollow rotating cylinder turning on a rotatable shaft, the mantle of said cylinder being bisected transverse to the axis of rotation to form a first cylinder with a wall on one side and a mantle to engage the film and provide part of the support means for said film and a second cylinder, the mantle of which is also engaged with the film strip, providing the other part of said film support means, both being mounted to rotate on the same rotating shaft to turn independently of one another but adapted to be driven together by said film strip, an adjacent third hollow cylinder tightly connected on one side to said second cylinder, and on the other side connected to a sprocket drive means to turn with optical compensator means in synchronization with said film strip, an electrical brake means, comprising a metal disc tightly connected to said rotating shaft and a stationary electromagnet mounted exterior to the rotating cylinder and cooperating with said metal disc to release or restrain said shaft from turning said film support surface of said second cylinder; said second cylinder surface being provided with a first series of spaced circumferentially disposed apertures in a distance from each other which is the integral multi-



ple of the height of one picture section adapted to align and correspond with the apertures in the film strip for receiving light impulses from an external light source through said film apertures and the apertures of said second cylinder in case of malfunction in film feed each of said apertures being provided with conduit means for conducting the light it receives to one of a corresponding second set of apertures in said third cylinder, said second cylinder being further provided with an internal gear-ring means mounted therein to engage gear means on said rotatable shaft for turning said second cylindrical surface independently of said first cylindrical surface, stationary light detector means being disposed external to said third cylinder to receive light sequentially from each of said second set of apertures and to produce an electric impulse in case of malfunction of film feed, means being further provided for amplifying and transmitting said electrical current to said electrical brake means for restraining or releasing rotation of said rotatable shaft.

4,498,746

EXTENSION PLATFORM TO SUPPORT TRANSPARENCIES FOR AN OVERHEAD PROJECTOR

John S. Wright, 6115 N. Lake Dr. Ct., Milwaukee, Wis. 53217

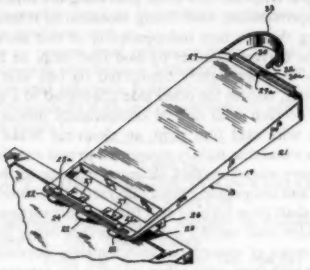
Continuation-in-part of Ser. No. 74,490, Sep. 11, 1979, abandoned. This application Oct. 7, 1983, Ser. No. 540,029

Int. Cl.[3] G03B 21/00

U.S. Cl. 353—120 9 Claims

1. An extension platform for holding a pack of transparencies in an operative position on an overhead projector, said platform including an elongated body member for supporting a pack of transparencies, at least two suction cups on the underside of the body member at one end thereof for attaching it directly to the stage of an overhead projector, fulcrum means located beneath the body member adjacent the one end thereof, said fulcrum being positioned to contact the stage and to translate the downward gravitational force of the weight of the pack of transparencies into a substantially vertical upward pull on the suction cups, and means for securing the pack of transparencies to the body member, said means being an upward projection at the other end of the body member, which projection cooperates with the pack to prevent it from being separated from the extension platform, said pack is in a book

and the upward projection and the hinge of the book have aligned openings into which a plug can be inserted to lock the



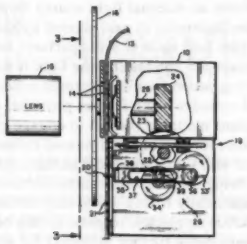
book to the body member and the fulcrum means is a generally wedge-shaped member attached to the underside of the body member.

4,498,747

MOTION PICTURE CAMERA

Bennie R. Brothers, 1731 N. Normandie, Hollywood, Calif. 90027

Filed Aug. 1, 1983, Ser. No. 519,484
Int. Cl.³ G03B *41/04, 9/10*
U.S. Cl. 352—191 **11 Claims**



1. A film pull down mechanism and shutter for a motion picture camera in which film is moved fron one frame to the next in a 360° operating cycle made up of a pull down time and a dwell time, said mechanism including:

(a) means for effecting pull down of said film in a period less than the dwell time of said film so that film exposure is increased over that occurring when the pull down time and dwell time are equal;

(b) a shutter having an opaque sector less than 180° and an open sector greater than 180° responsive to operation of said pull down mechanism to eclipse said film from exposure during said pull down time; and

(c) means for varying the length of film pulled down whereby film frames of different vertical dimensions can be properly exposed.

4,498,748

CAMERA FOR PHOTOGRAPHING SCALE MODELS

Peter W. J. Jones, Belmont; William T. Plummer, Concord, and Dennis W. Purcell, Medford, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 3, 1982, Ser. No. 446,598
Int. Cl.³ G03B *17/48*
U.S. Cl. 354—79 **12 Claims**

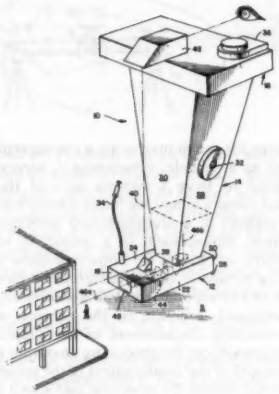
1. A camera for photographing scale models from the perspective of a scale person observing the model, said camera comprising:

a narrow, pedestal-like base capable of support on a flat surface and including at one end thereof an opening for admitting light into said base;

an elongated upstanding housing supported in said base and diverging therefrom with increasing distance from said base so that the dimensions of said housing at its end distant from said base are substantially larger in area than the end thereof connected to said base;

a film back supported on said housing distant end and including means for facilitating supporting film in an exposure plane of moderately large format;

an optical system supported within said base and including aligned along an axis parallel to said base in line with said opening in said base:



(a) a small aperture for providing said camera with a depth of field ranging from a few inches to infinity to simulate the depth of field a scale camera in the hand of a scale person would have; and

(b) an afocal component structured for increasing the angular field of view of said camera compared to what it would have with just said aperture and for minimizing distortion, said angular field of view approximating the visual field of a scale person observing a model; and

optical means for defining a folded optical path between said optical system and said exposure plane so that light emerging from said optical system is caused to travel toward said exposure plane to form a properly oriented image therein.

4,498,749

FOLDED OPTICAL LARGE FORMAT PHOTOMICROGRAPHIC CAMERA SYSTEM

Richard B. Hoover, 7706 Teal Dr., SW., Huntsville, Ala. 35802

Filed Apr. 1, 1983, Ser. No. 481,455
Int. Cl.³ G03B *17/48*
U.S. Cl. 354—79 **36 Claims**

1. A photomicrographic camera system comprising:

a microscope having an objective and an eyepiece;

a camera housing comprising:

a main body, said main body comprising an enclosure having a flat base,

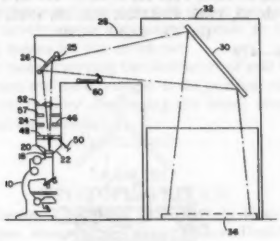
a horizontal arm section connected to the top side of said main body and extending laterally therefrom,

a vertical neck section attached to said horizontal arm section and suspended over said microscope and covering said microscope eyepiece;

a primary mirror located in the junction of said neck section and said arm section, directly above said microscope, said

mirror being oriented at substantially a 45° angle with respect to the vertical, said mirror being arranged to be able to receive a vertically ascending and diverging light beam emanating from said eyepiece of said microscope and deflect it horizontally along the long axis of said arm;

a secondary mirror located in the top of said camera housing main body, said mirror being oriented at substantially a



45° angle with respect to the vertical, so as to receive said light beam from said primary mirror and deflect it downward;

a shutter arranged to interrupt said light beam;

a film holder resting on said base of said camera housing main body below said secondary mirror and positioned to receive an image carried by said light beam;

a film mounted in said film holder.

4,498,750

LIGHT SHIELDING DEVICE IN SINGLE LENS REFLEX CAMERA

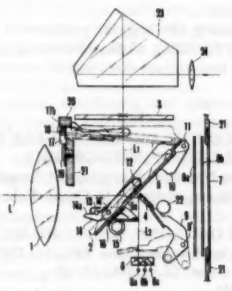
Masayuki Suzuki; Masayoshi Yamamichi, both of Kanagawa, and Tsunemasa Ohara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

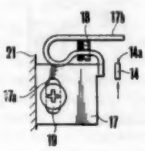
Filed Oct. 25, 1982, Ser. No. 436,381

Claims priority, application Japan, Oct. 30, 1981, 56-162145

Int. Cl.³ G03B *19/12*

U.S. Cl. 354—154 **6 Claims**





1. A light shielding device for a single lens reflex camera including a reflex mirror provided with a light transmitting portion, comprising:

(a) means for covering said light transmitting portion when said reflex mirror is moved from a viewing position to an exposure position; and

(b) means for controlling said covering means, said controlling means being arranged to contact with said covering means at a point during the movement of said reflex mirror from the viewing position to the exposure position and then to control the operation of said covering means, being able of adjusting the timing of contact with said covering means, and being resiliently supported to absorb shock at the time when said controlling means strikes said covering means, with the initial tensile force of that resiliency being made adjustable independently of the timing adjustment of the contact.

4,498,751

DISPLAY DEVICE FOR CAMERA

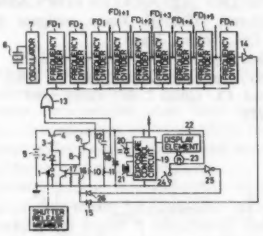
Tetsuro Goto, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 422,006, Sep. 23, 1982, abandoned. This application May 15, 1984, Ser. No. 610,187

Claims priority, application Japan, Nov. 20, 1981, 56-186694

Int. Cl.³ G03B *17/18;* **H05B** *37/00*

U.S. Cl. 354—289.1 **15 Claims**



1. Display device for camera, comprising:

(a) display means;

(b) a switch for display, said switch being of a self-return type and driving said display means at least while manual operation is being applied thereto;

(c) illuminating means capable of illuminating said display means;

(d) a switch for illumination, said switch being separate from said display switch and also of a self-return type, and driving said illuminating means at least while manual operation is being applied thereto; and

(e) holding means to hold the driving condition of said display means while manual operation is being applied to said illuminating switch.

4,498,752

ARRANGEMENT FOR SPACING AND CONVEYING OVERLAPPING PHOTOSENSITIVE ARTICLES

Günter Schirk, and Horst Köninger, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 31, 1983, Ser. No. 481,047

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1982, 3212478

Int. Cl.³ G03D *9/00*

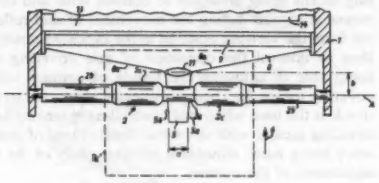
U.S. Cl. 354—301 **28 Claims**

1. An arrangement for conveying overlapping photosensitive articles, particularly photographic sheets, comprising:

(a) conveying means for conveying a pair of overlapping photosensitive articles in a predetermined direction; and

(b) guide means arranged to guide the articles for movement

on opposite sides of a predetermined plane, said guide means including a sheet-like first portion which is located in said predetermined plane and has an upstream end provided with a corner, and said guide means further including a tongue-like second portion which extends



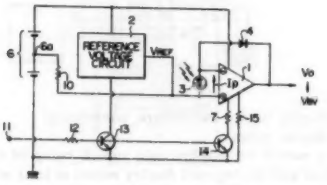
upstream from said upstream end, said first and second portions defining a junction region having opposite faces which flank said predetermined plane, and at least one of said faces being provided with a protuberance to thereby bias the respective article away from said predetermined plane.

4,498,753

PHOTOMETRIC APPARATUS FOR CAMERAS

Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1983, Ser. No. 532,686
Claims priority, application Japan, Jan. 12, 1983, 58-2506[U]
Int. Cl.³ G03B *7/081*; G01J *1/44*
U.S. Cl. 354—425 **7 Claims**



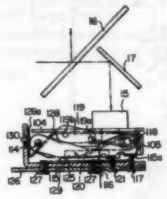
1. A photometric apparatus for a camera, comprising:
a power source for supplying power to a camera;
an impedance element connected to a voltage divider terminal of said power source;
a reference voltage circuit whose output terminal is connected to said voltage divider terminal through said impedance element, the circuit producing a reference voltage of a low impedance at said output terminal during its operable condition;
an operational amplifier which has an input terminal to which a voltage at the output terminal of said reference voltage circuit is constantly applied and which is constantly in an operable condition with a bias current of an extremely low power consumption, the amplifier producing a logarithmically converted voltage of a photocurrent flowing through a photoelectromotive element for photometry which is connected between both input terminals of said amplifier with a zero bias; and
a switching circuit for switching said reference voltage circuit from its inoperable condition and switches said operational amplifier from a condition that a bias current of an extremely low power consumption is supplied to a normal operable condition that a normal bias current is supplied, in synchronism with a photometry initiation signal.

4,498,754

SINGLE LENS REFLEX CAMERA

Yoshimi Ohno, Kawasaki; Ikuya Tsurukawa, and Tokio Ishino, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 12, 1983, Ser. No. 457,382
Claims priority, application Japan, Jan. 25, 1982, 57-9675; Jan. 25, 1982, 57-9676; Feb. 12, 1982, 57-20940; Feb. 15, 1982, 57-22232; Feb. 15, 1982, 57-22233; Feb. 26, 1982, 57-27085[U]
Int. Cl.³ G03B *7/099*
U.S. Cl. 354—479 **5 Claims**



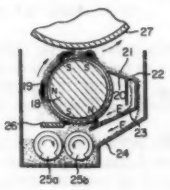
1. A single lens reflex camera having a mirror box and comprising:
a substrate;
a light receiving element mounted on said substrate;
a first and second stationary shaft;
a mechanism for adjusting tilting of said light receiving element, said adjusting mechanism being disposed within a bottom portion of said mirror box and which further comprises an element support plate having an end thereof pivotally connected with said substrate on which said light receiving element is mounted;
a first lever having a first end thereof pivotally mounted on said first stationary shaft and a second end thereof pivotally connected to said element support plate;
a second lever located on a side of said element support plate from said first lever and pivotally mounted on said second stationary shaft;
a relay lever pivotally mounted on the second lever and abutting against said substrate and said element support plate at different radii of rotation from a point of pivotal connection; and
means for adjusting the angular position of the first and second levers for tilting of the substrate in a lateral direction and in a fore-and-aft direction.

4,498,755

DEVELOPING DEVICE FOR USE IN ELECTROPHOTOGRAPHY

Masaharu Ohkubo; Nobuhiro Hayashi, and Tomohiro Aoki, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1981, Ser. No. 309,382
Claims priority, application Japan, Oct. 16, 1980, 55-144788
Int. Cl.³ G03G *15/09*
U.S. Cl. 355—3 DD **5 Claims**



1. A developing device for developing a latent image on an image holding member, comprising:
(a) magnetic field generating means having magnetic poles;

(b) non-magnetic sleeve means disposed around said magnetic field generating means for conveying developer on the surface thereof upto a developing position; and

(c) means for dividing developer which has left the surface of said sleeve means, after development, into two streams, said dividing means being positioned at the downstream side of a developing position in the moving direction of said developer on said sleeve means, and leading the first developer stream directly to said sleeve means, and leading the developer in the second stream to the side of agitating means for the developer,

said sleeve means carrying the developer of said first developer stream and the developer at the position of the agitating means, thereby developing the latent image on said image holding member.

4,498,756

DEVELOPING DEVICE

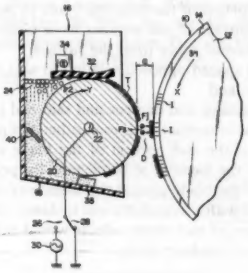
Masahiro Hosoya, Yokohama, and Tsuyoshi Ueno, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 31, 1982, Ser. No. 363,933

Claims priority, application Japan, Apr. 7, 1981, 56-51048

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—3 DD **15 Claims**



1. Apparatus for forming a visible image on the surface of an image bearer rotating in one direction at a given speed, said visible image corresponding to an electrostatic latent image on said surface, comprising:

non-magnetic toner;

a non-magnetized developing roll disposed at a position where any layer of said non-magnetic toner disposed on the outer circumferential surface of said developing roll does not contact the surface of said image bearer, said developing roll rotating in a direction opposite to said one direction, a developing area being defined between said outer circumferential surface of said developing roll and said surface of said image bearer;

toner hopper means for containing said non-magnetic toner and for causing said non-magnetic toner in said hopper to touch that part of said outer circumferential surface of said developing roll which is disposed between a first position and a second position located in the rotation direction of said developing roll from said first position between said first position and said developing area; and

regulating means, provided adjacent to said developing roll at said second position, for pressing that non-magnetic toner on said developing roll which passes through a gap between said regulating member and said developing roll, and charging said passed non-magnetic toner by slide-contacting said passed non-magnetic toner with said developing roll, so that said charged non-magnetic toner may be attracted to said developing roll by its charges and transferred to said developing area by rotation of said developing roll, and said non-magnetic toner which has passed through the gap forming a thin layer on that part of said developing roll which is located between said second position and said developing area.

4,498,757

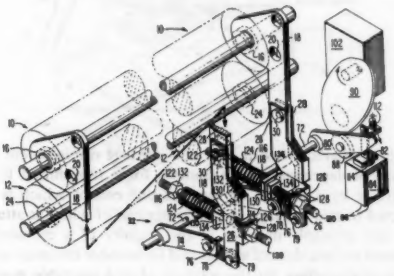
DEMOUNTABLE, MODULAR TONER-FUSER ASSEMBLY FOR ELECTROGRAPHIC PRINT APPARATUS

Wayne E. Lance, Orlando, and Wilson P. Rayfield, Longwood, both of Fla., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 17, 1982, Ser. No. 409,023

Int. Cl.³ G03G *15/20*

U.S. Cl. 355—3 FU **10 Claims**



1. Apparatus for fusing toner in an elecrographic printing/-copying apparatus comprising

(a) a modular, demountable, toner fuser assembly comprising a pair of confronting roller members; means mounting one of said roller members for pivotal movement relative to the other of said roller members;

force regulator means interconnected to said mounting means including means for adjustably loading said rollers into engagement under a prescribed regulator loading force including means providing a visual indication of said loading force;

dead center linkage operably interconnecting said mounting means effective when moved in one direction to instantly separate said rollers;

(b) means for moving said dead center linkage from a non-load position wherein said rollers are out of engagement to a full load position wherein said load is effectively multiplied to the prescribed force with the rollers in tight engagement;

(c) signal activated means constraining said dead center linkage in said full load position; and

(d) means for automatically retracting said dead center linkage and said roller members to a nonload position effectively permitting said toner fuser assembly to be mechanically disengaged and removably separated from said means for moving said dead center linkage and said signal activated means.

4,498,758

APPARATUS FOR TRANSFERRING XEROGRAPHIC IMAGES

Petrus R. Nelen, Essen, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed May 25, 1983, Ser. No. 498,157

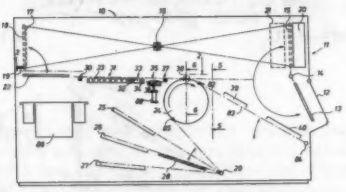
Claims priority, application United Kingdom, May 26, 1982, 8215317

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR **17 Claims**

1. Apparatus for use in transferring a xerographic toner image from the surface of a first element to the surface of a second element, said apparatus comprising a rotatable member having a cylindrically curved periphery for supporting one

element in cylindrically curved condition, concentric with the axis of rotation of said rotatable member, a carriage for holding another element, in the form of a sheet, a track for guiding said carriage substantially tangentially to the path of motion of said curved periphery of said rotatable member at an image transfer station, at which station there is means for forming an electrical potential gradient for effecting such toner image transfer, and driving means for rotating said rotatable member and causing a displacement of said carriage past said image transfer



station, characterised in that said carriage displacement takes place in dependence of a traction force transmitted to said carriage by a flexible tie member one end of which is connected to said carriage and the other end of which is attached to said rotatable member in the vicinity of a cylindrically curved surface thereof so that said tie member becomes wound onto such surface by the rotation of said rotatable member, such surface having a radius of curvature such that the carriage is pulled past the transfer station at a speed substantially equal to that of such periphery of said rotatable member.

4,498,759

CONTINUOUS VARIABLE MAGNIFICATION-TYPE COPYING MACHINE CAPABLE OF ENLARGING AND CONTRACTING AN IMAGE

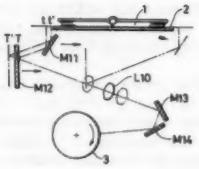
Ryota Ogawa, and Ikuo Negoro, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1982, Ser. No. 422,500

Claims priority, application Japan, Sep. 24, 1981, 56-150916

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—8 **18 Claims**



1. A continuous, variable magnification-type copying machine capable of enlarging and contracting an image, said copying machine having a stationary original placing plate, comprising; a full-speed mirror; means for moving said full-speed mirror to scan an original; a lens; means for moving said lens according to a desired magnification; a half-speed mirror system; means for moving said half-speed mirror system to a scanning starting position determined according to said desired magnification; said lens moving means and said half-speed mirror system moving means comprising numerical control motor means for controlling the scanning starting position of said half-speed mirror and the position of said lens in accordance with a desired magnification of said image; and means for continuously varying the full-speed and said half-speed mirror system scanning speeds according to said desired magnification.

4,498,760

BLADE CLEANING APPARATUS

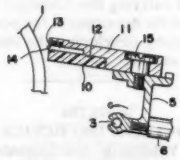
Takashi Sugiyama, Okazaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 24, 1983, Ser. No. 469,571

Claims priority, application Japan, Mar. 2, 1982, 57-33244; Nov. 24, 1982, 57-206802

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **10 Claims**



1. A blade cleaning apparatus comprising:

a cleaning blade having a free end portion for being held in pressing contact with a surface of a member movable past said cleaning blade and having residual toner deposited on the surface thereof which is to be removed therefrom;

holding means on which said blade is mounted for holding the end portion of the cleaning blade in pressing contact with the surface of the member to be cleaned for removing the residual toner from the surface;

a damper in spaced opposed relation to said end portion of said blade; and

means for causing said damper and said end portion of said blade to be in contact with each other at a part other than the part of the end portion of the blade contacting the surface of the member to be cleaned for pressing the end portion of the blade against the surface of the member to be cleaned with a force sufficient to damp vibrations of the end portion of said blade which would otherwise cause the blade to produce noise.

4,498,761

CINE-MODE CAMERA

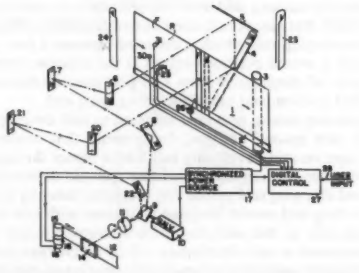
Robert D. Therien, Newbury Park; Forrest L. Langford, Northridge; Armond Motamed, Encino, and Robert D. Williams, Agoura, all of Calif., assignors to Terminal Data Corporation, Woodland Hills, Calif.

PCT No. PCT/US83/00103, § 371 Date Mar. 17, 1983, § 102(e) Date Mar. 17, 1983, PCT Pub. No. WO84/02985, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 21, 1983, Ser. No. 527,774

Int. Cl.³ G03B *27/32, 27/52*

U.S. Cl. 355—24 **14 Claims**



1. A film camera system for forming stationary images trans-

versely disposed upon a film strip (12) of a continuously moving succession of spaced documents (1), comprising;

(a) means to move (2,3) said documents,

(b) plural mirrors (4–8; 20,22) positioned to bring an image of the front and rear of each document adjacently upon a single mirror (9),

(c) an objective lens (11) between said single mirror and said film strip,

(d) means to rotate (10) said single mirror (9) transversely of the length of said film strip,

(e) means to translate (15,16) said film strip, and

(f) electronic means (17,27) having microprocessor apparatus (35,36) to effect synchronous control of said means to translate (2,3) said documents, said means to rotate said single mirror (9), and intermittently said means to translate (15,16) said film strip (12),

to form a stationary image of both the front and the rear of each document adjacently and transversely of said film strip for the exposure thereof while it is stationary.

4,498,762

PROJECTION TYPE EXPOSURE APPARATUS

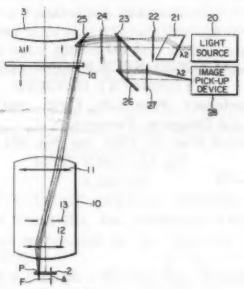
Makoto Uehara, Tokyo, and Satoru Anzai, Zama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,394

Claims priority, application Japan, Dec. 25, 1981, 56-214795

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—55 **10 Claims**



1. A projection type exposure apparatus having a projection objective lens, a projection negative having a predetermined shape pattern and an alignment mark, a photosensitive plate having an alignment mark, the shape pattern of said projection negative being projected upon said photosensitive plate by said projection objective lens, main illuminating optical means for illuminating said projection negative with a first wavelength light to which said photosensitive plate is sensitive, and alignment optical means for illuminating said projection negative with a second wavelength light to which said photosensitive plate is insensitive and for detecting the positional relation between said projection negative and said photosensitive plate by said second wavelength light through said projection objective lens, characterized in that one of the alignment mark on said projection negative and the alignment mark on said photosensitive plate has a zone pattern which forms a light-condensing point at a position spaced apart by a predetermined amount from the surface on which said one mark is formed, and said predetermined amount corresponds to the amount of chromatic aberration of said projection objective lens, at the side thereof adjacent to said zone pattern, for said second wavelength light relative to said first wavelength light.

4,498,763

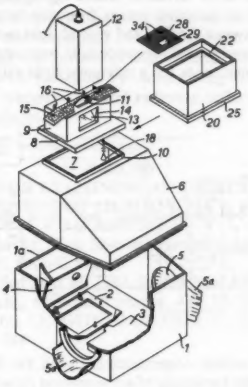
FIXED FOCUS ENLARGER

George F. A. M. Turner, Ingatestone, England, assignor to Ciba-Geigy A.G., Basel, Switzerland

Filed Jun. 27, 1983, Ser. No. 508,291

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—55 **8 Claims**



1. A fixed focus enlarger having a frame which encloses an image focussing area which comprises located on the frame a removable transparency holder having a transparency aperture and an enlarging lens located at a predetermined distance beneath the transparency aperture, the enlarger being characterised in that there is also provided an extension tube which is insertable between the top of the said frame and the said removable transparency holder and which when in position in the enlarger increases the distance between the image focussing area and the enlarging lens by a predetermined amount, there also being provided means either to increase the focal length of the enlarging lens by a predetermined amount, or means to decrease the distance between the enlarging lens and the transparency aperture by a predetermined amount, so that in either case when the extension tube is in position in the enlarger a predetermined area of part of a transparency can be focussed on the focussing area to form an image of that part of the transparency which is the same size as that formed of the whole transparency in the absence of the extension tube.

4,498,764

DYNAMIC CONTROL ARRANGEMENT FOR A DISTANCE MEASURING APPARATUS

Ludwig Bölkow, Oberfeldallee 9, D-8022 Grünwald; Walter Mehnert, Ottobrunn, and Hoiko Chaborski, Munich, all of Fed. Rep. of Germany, assignors to Ludwig Bölkow, Grünwald, Fed. Rep. of Germany

Filed Jun. 7, 1982, Ser. No. 386,026

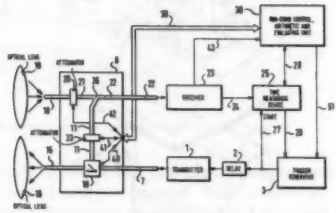
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1981, 3122806; May 24, 1982, 3219452

Int. Cl.³ G01C *3/08*

U.S. Cl. 356—5 **27 Claims**

26. Distance measuring apparatus for measuring the transit time of an individual unmodulated measuring light pulse to a target and therefrom, by reflection, back to the apparatus which for this purpose comprises a transmitter driven by a trigger signal from a trigger generator for emitting individual unmodulated measuring light pulses of short duration, an optical receiving means including an electro-optical receiver and a time measuring means for transit time measurement of an individual measurement light pulse, which measurement is initiated by a start signal related to the trigger signal from the trigger generator, said time measuring means also being operatively connected to said electro-optical receiver for receiving

therefrom a stop signal on receipt of an individual reflected unmodulated measuring light pulse by the receiver for stopping said transit time measurement of said individual measuring light pulse, a first light path from the transmitter to an optical transmitting means for transmitting individual light pulses toward said target, a second light path from said receiver to an optical receiving means for supplying to said receiver individual reflected measuring light pulses received by said optical receiving means from the target, a reference light path between the first and second light paths and communicating therewith, said reference light path establishing predetermined transit times for a reference light pulse, a light path



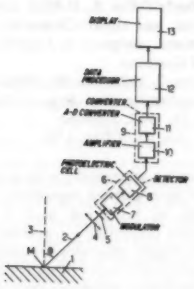
change-over switch communicating with the first and reference light paths for supply of a transmitted pulse to said optical transmitting means and to said reference light path, said trigger signal from said trigger generator being timed in relation to said light path change-over switch for sequentially directing light pulses into said first light path and said reference light path, said light path change-over switch comprising a rotating disc having a rotational axis parallel to the first light path and being provided with at least one opening for passing therethrough said transmitted light to said first path and further provided with at least one mirror for deflecting the transmitted light through a predetermined angle into the reference light path.

4,498,765

PROCESSES FOR THE REMOTE MEASUREMENT OF THE EMISSIVITY AND/OR THE TRUE TEMPERATURE OF A BODY WITH RELATIVELY SMOOTH SURFACE

Philippe Hervé, Paris, France, assignor to Universite Paris X - Paris, Nanterre, France

Filed Jun. 23, 1982, Ser. No. 391,380
Claims priority, application France, Jun. 25, 1981, 81 12539
Int. Cl.³ G01J *5/58, 5/32*
U.S. Cl. 356—43 **7 Claims**



1. A process for the remote measurement of the emissivity of a body with relatively smooth surface, by successive measurements of the luminance at the same point on the surface of the body, made respectively on thermal radiations polarized in different directions, characterized in that it comprises the succession of steps consisting:

in making a first measurement A of the luminance at said point on the surface of the body at an emission angle θ, the thermal radiation on which the measurement is made being polarized in a first direction with respect to the emission plane,

then in making a second measurement B of the luminance at the same point and at the same emission angle θ, the thermal radiation on which the measurement is made being polarized in a second direction with respect to the emission plane, this second direction being different from said first direction,

finally, in determining the emissivity ϵ of the body from the following functions:

$$\epsilon = a_1 + \left(1.05 - \frac{B}{A}\right) \times (9.3332 \times 10^{-8}\theta^5 - 2.6666 \times 10^{-5}\theta^4 + 2.9883 \times 10^{-3}\theta^3 - 0.16243\theta^2 + 4.18573\theta - 38.49)$$

in which $\begin{cases} 0.82 < a_1 < 1.12 \\ 0 \leqq \theta_1 \leqq 15° \\ 75° < \theta_2 < 105° \end{cases}$

θ_1 being the angle of the axis of the polarizer for measurement A with respect to a polarization perpendicular to the emission plane, and

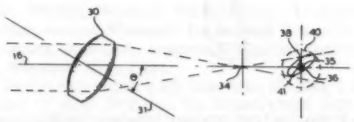
θ_2 being the axis of the polarizer for measurement B with respect to a polarization perpendicular to the emission plane.

4,498,766

LIGHT BEAM FOCAL SPOT ELONGATION IN FLOW CYTOMETRY DEVICES

Fred C. Unterleitner, Palo Alto, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Mar. 25, 1982, Ser. No. 361,672
Int. Cl.³ G01N *21/64*
U.S. Cl. 356—73 **12 Claims**



1. Flow cytometry apparatus comprising: means for flowing particles in a stream of fluid; a source of light adapted to direct a beam of light at said flowing particles; beam focusing lens means positioned in the optical path of said light beam so that an axis of said lens means, through its optical center, forms an angle with the axis of said beam of light for astigmatically providing an elliptical beam spot at the fluid stream to thereby elongate the focal spot of said beam; and means for detecting one or more parameters of the particles in said stream related to light from said beam striking said particles.

4,498,767

APPARATUS FOR MEASURING LIGHT

William E. McGovern, Hanover Park, and Kuey Y. Tsao, Barrington, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

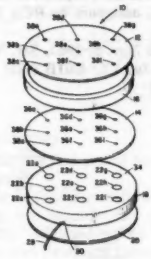
Filed Sep. 7, 1982, Ser. No. 415,492
Int. Cl.³ G01J *1/06*
U.S. Cl. 356—121 **11 Claims**

1. An apparatus for measuring the collimation and perpen-

dicularity of light, provided by an adjustable light source, to a plane comprising:

a pair of parallel, spaced, opaque first and second mask plates (**12, 14**) each having facing and outwardly disposed surfaces with the facing surface of said first mask plate (**12**) positioned opposite the facing surface of said second mask plate (**14**);

each of said first and second mask plates (**12, 14**) having a plurality of spaced, small holes (**38***a–i*, **36***a–i*), a plurality of said holes (**38***a–i*) in said first mask plate (**12**) being in alignment with corresponding holes (**36***a–i*) in said second mask plate (**14**);



a plurality of photosensitive devices (**26***a–i*) generating an electrical signal in response to light, each one of said photosensitive devices (**26***a–i*) being positioned adjacent one of said holes in said second mask plate so that light passing through the holes (**38***a–i*) of said first mask plate (**12**) which is substantially perpendicular to the plane of said first mask plate (**12**) will pass through the corresponding aligned holes (**36***a–i*) of said second mask plate (**14**) striking the corresponding photosensitive devices (**26***a–i*); and

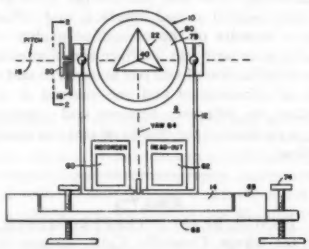
means (**32**) for providing an indication of the electrical signal from selected ones of said photosensitive devices (**26***a–i*).

4,498,768

ANGLE OF ARRIVAL METER

Herbert B. Holl, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1982, Ser. No. 349,128
Int. Cl.[3] **G01B** *11/26*
U.S. Cl. 356—141 **6 Claims**



1. Apparatus for the determination of the horizontal and vertical aspect angles of radiation received from a remote transmitter comprising:

a. a first platform;

b. a movable housing mounted on said first platform;

c. a triangular cube corner reflector mounted on said housing to receive radiation from said remote transmitter, said corner reflector being a triangular trihedral retroreflector having three mutually perpendicular mirror surfaces;

d. a plurality of detectors mounted in an array adjacent each of said three mutually perpendicular mirror surfaces and facing the inside of said reflector, said detectors disposed for receiving reflected radiation from said reflector and for providing an output in response to receiving said reflected radiation;

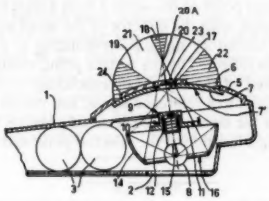
e. electronic processor means connected to said detector means for receiving said output from said detectors for determining the horizontal and vertical aspect angles of said received radiation by determining the number of detectors energized by said radiation reflected from said mirror surfaces.

4,498,769

DEVICE FOR EXAMINING AN OBJECT UNDER CONDITIONS OF LIGHTING ON A BLACK BACKGROUND

Jean-Pierre Cuvilly, Viels Maison, France, assignor to Essilor International, Creteil, France

Filed Apr. 13, 1982, Ser. No. 367,879
Claims priority, application France, Apr. 29, 1981, 81 08559
Int. Cl.[3] **G01N** *21/01;* **G02B** *21/10*
U.S. Cl. 356—244 **2 Claims**



1. A device for examining under conditions of lighting on a black background an object such as the surface of a spectacle lens, and adapted to be used by an operator for examining different markings provided on a surface of a spectacle lens comprising, in a casing,

a support for supporting the object to be examined, said support being constituted by an opaque plate having a profile slightly curved outwardly, and said opaque plate being fixed beneath an oval opening of said casing, the width of said opening being so selected that it can receive large spectacle lenses, while its length is so selected that it renders it just possible to displace slidingly said lenses with a view to placing zones thereof provided with said markings in front of an aperture of of the support, and

black-background lighting means including an opaque screen adapted to arrest light rays issuing from a light source and capable of penetrating directly said aperture provided in said support, as well as reflecting and/or concentration means adapted to reflect laterally the light beams issuing from said light source, which are transmitted to said object through said aperture, said light source being disposed in a fixed position determined with reference to the periphery of said opaque screen, and

said casing comprises a mounting opening which opens into an opening of said reflecting and/or concentration means and allows said light source supported by said screen on the side opposite to the aperture of the support to be easily mounted in position and edges of the oval opening of the casing, which project above said opaque plate, constitute a stop rim for positioning the spectacle lens slidingly displaced by the operator with a view to observing the different markings engraved on said lens.

4,498,770

APPARATUS AND METHOD FOR DETERMINING THE CONFIGURATION OF A REFLECTIVE SURFACE

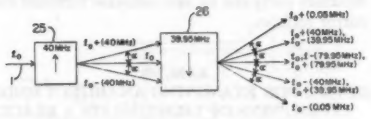
Richard R. Corwin, Xenia, and Stephen L. Moorman, Miamisburg, both of Ohio, assignors to Beta Industries, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 43,442, May 29, 1979, Pat. No. 4,316,670. This application Feb. 19, 1982, Ser. No. 350,339

The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.

Int. Cl.³ G01B 9/02

U.S. Cl. 356—349 **24 Claims**



24. Apparatus for determining the position of a light reflecting surface with respect to time, comprising light transmitter means for producing two light beams forming a small angle therebetween, means receiving the light beams and for projecting a plurality of fringe patterns onto the surface with the patterns moving in predetermined non-coplanar directions and at predetermined frequencies, receiver means for observing at least one selected point on the surface from a direction forming a substantial angle with the bisector of the small angle and for producing an oscillatory signal corresponding to a fringe pattern component reflected by the surface point, means for determining the phase of the signal corresponding to the selected point with respect to a reference signal, and means responsive to the phase of the signal for the selected point on the surface for determining a location of the selected point as a function of time.

4,498,771

METHOD AND MEANS FOR INTERFEROMETRIC SURFACE TOPOGRAPHY

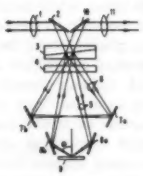
Günter Makosch, Sindelfingen-Maichingen, and Franz Schedewie, Boblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 3, 1982, Ser. No. 374,135

Claims priority, application European Pat. Off., Sep. 17, 1981, 81107336.0

Int. Cl.³ G01B 9/02

U.S. Cl. 356—351 **12 Claims**



1. Apparatus for interferometrically determining the topography of a surface through point-by-point probing comprising:

laser means for providing a polarized beam of optical radiation:

a single birefringent crystal element for splitting said polarized beam into a measuring beam and a reference beam;

means for directing said measuring beam to impinge on said surface at an oblique grazing angle of incidence;

means for reflecting said reference beam and said measuring beam after impingement on said surface so that said measuring and reference beams are directed through said single birefringent crystal element;

means for collimating said reflected measuring and reference beams after passage through said element;

said collimated beams being characterized by phase differences representing variations in topography of said surface; and

means for detecting said phase differences so that variations in surface topography are determined.

4,498,772

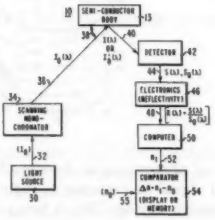
METHOD TO DETERMINE THE CRYSTALLINE PROPERTIES OF AN INTERFACE OF TWO MATERIALS BY AN OPTICAL TECHNIQUE

Lubomir L. Jastrzebski, Plainsboro, N.J., and Jacek Lagowski, Wobum, Mass., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 5, 1982, Ser. No. 439,562

Int. Cl.³ G01B 9/02, 11/02

U.S. Cl. 356—357 **4 Claims**



1. A method for determining the crystalline quality of one material at an interface between said one material and a different material of different crystalline lattice, said one material (1) having an exposed surface opposed to said interface, (2) having negligible absorption in a given optical spectrum, and (3) having a known reflection coefficient at said exposed surface, comprising the steps of;

(a) exposing said exposed surface to a light beam scanned sequentially with wavelengths within said optical spectrum whereby light reflected from said exposed surface oscillates in intensity between extrema as a result of interference reflections between said exposed surface and said interface;

(b) measuring the intensity of reflections from said surface at each respective wavelength to obtain a series of reflection intensity signals corresponding to each said wavelength;

(c) determining from said reflection signals said reflectivity extrema;

(d) determining from said extrema the refractive index of said one material at said interface, said refractive index being a measure of the crystalline quality of said one material at or near said interface and comparing the bulk index of refraction of said one material to said determined index of refraction of said one material at or near said interface, the difference between said respective indexes being a measure of the quality of said one material at said interface.

4,498,773

PENCIL BEAM INTERFEROMETER

Karlheinz von Bieren, Camarillo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 4, 1983, Ser. No. 491,496

Int. Cl.³ G01B 9/02

U.S. Cl. 356—360 **7 Claims**

1. A pencil beam interferometer for measuring optical surfaces, comprises:

a light beam;

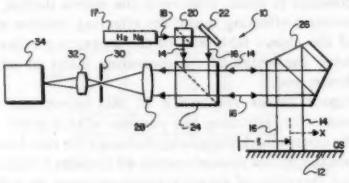
a first beam splitter optically oriented to receive and to split

said incoming light beam into a first and a second pencil beam;

means for deflecting said second pencil beam, wherein said deflected second pencil beam is displaced from but parallel to said first pencil beam;

means for redirecting and transmitting said parallel pencil beams while concurrently maintaining them in parallel;

an alignment invariant optical device disposed to receive the output of said means for redirecting and transmitting said parallel pencil beams, and wherein said alignment invariant optical device directs said pencil beams to the optical surface to be measured;



an optical lens capable of focusing said two pencil beams in its back focal plane, and wherein said optical lens is disposed to receive the reflected pencil beams from said optical surface after they pass back through said alignment invariant optical device and said means for redirecting and transmitting said parallel pencil beams; and

a readout section optically positioned to detect the interference pattern generated by said focused beams.

4,498,774

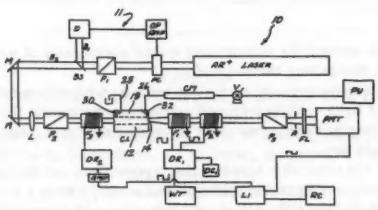
MICRO-POLARIMETER FOR HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Edward E. Yeung, Ames, Iowa; Larry E. Steenhoek, Wilmington, Del.; Steven D. Woodruff, Morgantown, W. Va., and Jeng-Chung Kuo, Skokie, Ill., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 286,026, Jul. 22, 1981, abandoned. This application Apr. 27, 1983, Ser. No. 489,031

Int. Cl.³ G01N *21/21, 31/06*

U.S. Cl. 356—368 **12 Claims**



1. An apparatus for determining trace and micro levels of selected species of optically active molecules in a non-optically active eluent which is cycled through a calibrated system for high performance liquid chromatography, comprising:

a flow cell with flat ends through which the eluent is cycled along a central bore, the bore having an input opening in one end of the cell and an output opening in the other end, and wherein the volume of the flow path between the openings is sufficiently small to allow substantially only one species of the selected molecules to be in the volume at any time;

transparent, flat, cell windows which are mounted substantially strain free over the openings, and which allow light to pass without substantial scattering, reflection or refraction;

a laser adapted to irradiate said input opening along the longitudinal axis of the central bore and to output at least two milliwatts when energized, and wherein the operating wave length of the laser will not be substantially absorbed by the molecules or the eluent so that thermal lensing is prevented;

a polarizer positioned between the laser and flow cell so that a beam from the laser will be polarized before entering the input opening;

a lens focusing the laser beam positioned between the laser and the polarizer so that the laser beam will be polarized and collimated while passing through the flow cell without substantially being reflected off the flow cell walls;

means for aligning said laser and lens whereby said laser and said lens in combination will have a beam pointing stability of at least 0.5 milliradians;

an analyzer positioned after the exit opening so that the polarization of the laser beam after the beam has passed through the flow cell can be determined, said polarizer and analyzer being selected so that an extinction ratio of at least 10^{10} is achieved between the combination thereof;

means for isolating said polarizer, analyzer and flow cell from vibrations which would effect their relative angular position on the order of 10^{-3}°;

means for modulating the laser beam at a frequency in a substantially noise free region of the environment, and which is positioned between the polarizer and the analyzer in the path of the laser beam; and

means for filtering light, adapted to pass only light centered around the operating wave length of the laser beam and positioned in the path of the laser beam after the beam exits the analyzer so that the filtered, modulated beam can be converted to an electrical signal containing information on the direction and degree to which the polarized laser beam was rotated when it passed through the flow cell.

4,498,775

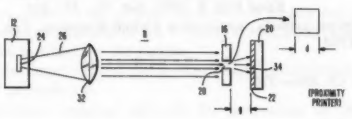
METHOD FOR DETECTING DISTANCE DEVIATIONS TO A PHOTORESIST SURFACE IN AN OPTICAL PRINTER

Lawrence K. White, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 17, 1982, Ser. No. 349,515

Int. Cl.³ G01B *11/02*

U.S. Cl. 356—375 **10 Claims**



1. A method for monitoring a distance or spacial deviations in the distance between a mask and a photoresist surface on a substrate or wafer in an optical printer comprising the steps of:

forming a mask having a pattern of a plurality of differently-sized apertures, each aperture having square corners;

passing light having at least one given wavelength through said mask to produce a characteristic diffraction pattern formed by a different diffraction-induced image for each respective aperture on said photoresist surface spaced from said mask;

each image having a unique predetermined characteristic shape that is diffraction-induced as a function of both the optical distance between the mask and the photoresist surface and the size of the aperture inducing said image; and

microscopically examining the shape of the respective photoresist images of the pattern to determine the distance or spacial deviations in the distance between the mask and

the surface of the photoresist according to associated apertures inducing the respective images;

the distance or spacial deviation thereof being determined from a predetermined correlation of each said unique image and the associated image-inducing aperture.

4,498,776

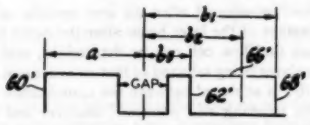
ELECTRO-OPTICAL METHOD AND APPARATUS FOR MEASURING THE FIT OF ADJACENT SURFACES

Paul R. Smith, Ortonville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 23, 1982, Ser. No. 410,401

Int. Cl.³ G01B *11/14*

U.S. Cl. 356—375 **11 Claims**



1. The method of measuring flushness and width of gap between two substantially parallel light reflective surfaces, the steps comprising:

forming an image of the gap and predetermined adjacent portions of the surfaces,

illuminating the gap and said adjacent portions of said surfaces by a pair of sharply defined beams having inboard beam edges substantially coincident on the gap and outboard beam edges within the said predetermined adjacent portions and at substantial angles to said surfaces so that the span of the image between its outboard edges varies with flushness, and

measuring the span of said image, said measurement identifying the location of a central dark spot corresponding to said gap and the outer edges of two illuminated regions corresponding to the illumination of adjacent portions of said surfaces by said beams.

4,498,777

APPARATUS FOR DETERMINING THE POSITION OF A POINT ON AN OBJECT OR THE SHAPE OF A PORTION THEREOF

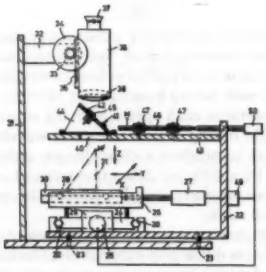
Peter J. Scott, 9 Whitehall Park, London, England N19 3TS

Filed Feb. 9, 1982, Ser. No. 347,294

Claims priority, application United Kingdom, Feb. 16, 1981, 8104774

Int. Cl.³ B43L *13/16*

U.S. Cl. 356—376 **15 Claims**



1. Apparatus, including a part-reflecting mirror device, for precisely determining the position of a point on a three-dimensional object despite parallax errors inherent in using said mirror device, the apparatus comprising:

a movable object table for supporting the three-dimensional object;

a measuring index;

an optical viewing device providing two non-parallel lines of sight directed toward the object table;

a part-reflecting mirror device arrange to enable an image of the measuring mark to be brought into coincidence with said point when the object is viewed through the optical viewing device;

means constraining the two lines of sight to be directionally constant in space, relative to the mirror device;

movement effecting means for effecting relative movement of the object table and of the measuring index so as to bring the image of the measuring index to said coincidence; and,

indicator means responsive to said movement effecting means for indicating the position of said point, whereby the constrained relationship between the two lines of sight and the mirror device renders all parallax errors constant, and therefore of no adverse consequence in making precise measurements.

4,498,778

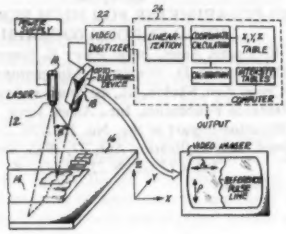
HIGH SPEED SCANNING METHOD AND APPARATUS

Steven J. White, Seattle, Wash., assignor to Technical Arts Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 249,131, Mar. 30, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 426,840

Int. Cl.³ G01B *11/24;* **G01C** *25/00;* **H04N** *7/02*

U.S. Cl. 356—376 **28 Claims**



1. A method for determining spatial coordinates of a workpiece, comprising the steps of:

(a) illuminating said workpiece and a jig with a planar source of light, said jig inherently defining a geometric figure;

(b) storing the dimensions of the geometric figure inherent in said jig;

(c) electronically viewing the intersections of the planar source of light and said workpiece and jig from a location spaced apart from said workpiece, jig and source of light, said viewing location being at a known distance from said jig, and at a known angle relative to said planar source of light;

(d) scanning electronic images formed by said electronic viewing along a plurality of horizontal lines, each line including a reference pulse corresponding to the point at which the planar light intersects and illuminates said workpiece or jig;

(e) determining the centroid of the reference pulse on selected scan lines;

(f) calculating calibration parameters using the geometric figure inherent in said jig; and

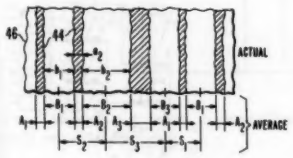
(g) calculating the spatial coordinates of the workpiece using the centroid of the reference pulses, said calibration parameters, and the known distance from the viewing point to the jig.

4,498,779

AUTOMATIC STRIPE WIDTH READER

Peter D. Southgate, Princeton; David W. Fairbanks, Monmouth Junction; Richard B. Davis, Trenton, and John P. Beltz, Willingboro, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,429
Claims priority, application United Kingdom, Jan. 10, 1979, 7900923
Int. Cl.³ G01B 11/02
U.S. Cl. 356—384 5 Claims



1. A system for determining the spacings between opaque stripes forming a light absorbing matrix on a color picture tube faceplate wherein the matrix has been formed by photoexposing the areas between the stripes in three separate exposures, said system comprising,

means for illuminating said faceplate,

photodetecting means positioned to receive light from said means for illuminating,

means for scanning said photodetecting means transversely across at least six stripes,

means for sweeping said photodetecting means in a direction substantially parallel to said stripes,

means for converting the output of said photodetecting means into a quantized signal,

means for dividing said quantized signal into separate signals representing stripe widths and opening widths between stripes,

means for accummulating stripe width and opening width signals associated with a particular exposure, and

means for converting the accummulated stripe width and opening width signals into three signals representative of corrections to be made in the three photoexposing steps.

4,498,780

PHOTOMETERING APPARATUS FOR USE IN CHEMICAL ANALYZER

Taiichi Banno; Kazuo Hijikata, both of Hachioji, and Hiroshi Takekawa, Sagamihara, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

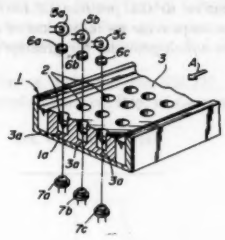
Filed Feb. 2, 1982, Ser. No. 345,052
Claims priority, application Japan, Feb. 10, 1981, 56-17391
Int. Cl.³ G01N 21/27, 21/01
U.S. Cl. 356—414 11 Claims

1. A photometering apparatus for use in a chemical analyzer comprising

a liquid type thermostat containing a temperature controlled liquid and having a bottom wall made of transparent materials;

a plurality of reaction vessels arranged in said thermostat and having bottom walls made of transparent material, the bottom walls of the reaction vessels contacting the bottom wall of the thermostat; and

a photometering unit including at least one light source for emitting a light beam and at least one light receiving element for receiving the light beam emitted from the light source and transmitted through test liquids contained in the reaction vessels, the light source and light receiving element being so arranged that they have an optical axis extending perpendicularly to a surface of said test liquids



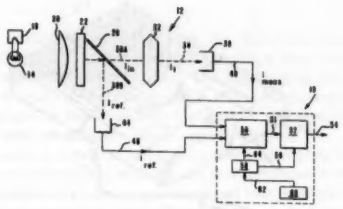
through the bottom walls of said thermostat and reaction vessels.

4,498,781

DATA COMPRESSION SYSTEM FOR A PHOTOMETER

Michael Kaplit, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 27, 1981, Ser. No. 296,851
Int. Cl.³ G01N 21/22
U.S. Cl. 356—435 2 Claims



1. In an apparatus for photometrically analyzing a sample having

a replaceable source of radiation receivable in a socket,

a first detector for generating a first analog electrical signal representative of the intensity of the radiation transmitted from the source through the sample, and

a second detector for generating a second analog electrical signal representative of the intensity of radiation from the source incident on the sample,

wherein the improvement comprises a data compression system itself comprising:

a logarithmic ratioing network for generating an analog electrical signal functionally related to the ratio of the first and second analog signals;

a dual slope analog-to-digital converter having a predetermined signal integrate time T_{int} for converting the analog ratio signal into a digital representation thereof;

the logarithmic ratioing network having a first and second chopper stabilized operational amplifier, the chopping frequency f_{chop} of each operational amplifier being proportional to an integer number N times the inverse of the signal integrate time t_{int} of the dual slope analog-to-digital converter such that the average value of the output from the converter due to chopping is zero; and

a network responsive to the position of the source within the socket for locating the same so as to produce the maximum light intensity therefrom, said network comprising:

a network for applying a predetermined supplemental current to the ratioing network to perturbate the signal output from the ratioing network, the magnitude of the perturbation being related to the position of the source within the socket; and

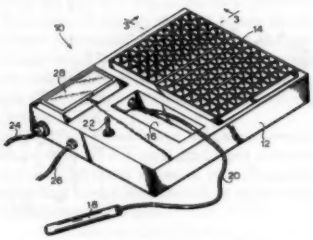
a monitoring arrangement for monitoring the output of the ratioing network as the position of the source within the socket is modified, the monitoring network being responsive to the position of the source within the socket to provide an indication of the location of the source which provides the greatest radiation intensity.

4,498,782

ASSEMBLY FOR DETERMINING LIGHT TRANSMISSIVENESS OF A FLUID

David R. Proctor, and Terry L. Foster, both of Abilene, Tex., assignors to Science Research Center, Inc., Abilene, Tex.

Filed May 29, 1981, Ser. No. 268,167
Int. Cl.[3] G01N *21/27*
U.S. Cl. 356—436 6 Claims



1. An assembly for determining the light transmissiveness of a fluid contained in a light-transparent well of a microtiter plate, wherein there are a plurality of wells in the microtiter plate, which comprises:

1. a light reception component, which comprises:

(a) a light-shield adapted by size and configuration to receive the multiple well portion of the microtiter plate and the light-shield receives each well;

(b) a plurality of apertures in the light-shield, each aperture having an entry and an exit into one of each wells;

(c) a plurality of light-conducting means, each having a first and second end, the first end being associated with an exit of one of said apertures whereby light passing out of each exit is separately received and conducted to the second end of each of said means;

(d) a photo-detector cell mounted to receive light from the second ends of each light-conducting means and to generate an electrical signal proportional to the light intensity; and

(e) means in electrical connection with the photo-detector cell for receiving and converting the signal to visually observable indicia; and

2. a light transmission component, which comprises;

(a) a light source;

(b) a housing for the light source; and

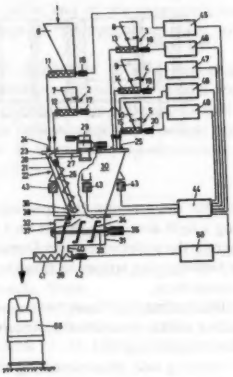
(c) an aperture in the housing, for passage of light out of the housing; said light transmission component being adapted to pass light separately through each well of a microtiter plate shielded by said light-shield, and separately into each entry of each aperture 1. (b).

4,498,783

PROCESS FOR MIXING AND PROPORTIONING SEVERAL MIXING COMPONENTS

Joachim Rudolph, Weil der Stadt, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 421,968
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146667
Int. Cl.[3] B01F *15/02*
U.S. Cl. 366—132 3 Claims



1. A process for mixing and proportioning a plurality of mixing components comprising

providing a plurality of separate mixing components, proportionally and successively feeding each component to a mixer,

continuously mixing the components in the mixer, weighing the material in the mixer as each component is fed to the mixer,

stopping the feed of the component being fed to the mixer after a predetermined weight in the mixer is obtained to provide a feed sequence pause,

gravimetrically removing a predetermined amount of mixed material during the feed sequence pause, and

volumetrically removing the mixed material during a feeding cycle.

4,498,784

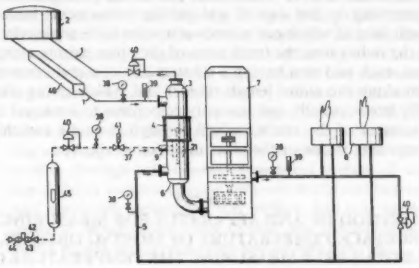
METHOD AND A DEVICE FOR MIXING AND HOMOGENIZATION OF A MAIN SUBSTANCE WITH AT LEAST ONE ADDITIVE SUBSTANCE, LIQUIDS IN PARTICULAR

Göran Bernhardsson, HedÅsgatan 4, S-412 53 Göteborg, and Tomas Jargell, Bävernsgränd 2, S-753 23 Uppsala, both of Sweden

PCT No. PCT/SE80/00271, § 371 Date Jun. 28, 1982, § 102(e) Date Jun. 28, 1982, PCT Pub. No. WO82/01478, PCT Pub. Date May 13, 1982
PCT Filed Oct. 31, 1980, Ser. No. 394,922
Claims priority, application Sweden, Oct. 26, 1979, 7908880
Int. Cl.[3] B01F *5/10*
U.S. Cl. 366—134 7 Claims

1. A method of continuous mixing and homogenization of a main substance with at least one additive substance, liquids in particular, characterized by the fact that the main substance is circulated in a primary conduit, that the additive substance is added to the main substance between said primary conduit and a secondary conduit, formed as a closed circuit within which the main substance and the additive substance are mixed together and circulated, whereby the pressure provided in the

primary conduit is higher than the pressure in the secondary conduit, so that the main substance and the additive substance



are supplied to said secondary conduit in dependence of a discharge from said secondary conduit.

4,498,785

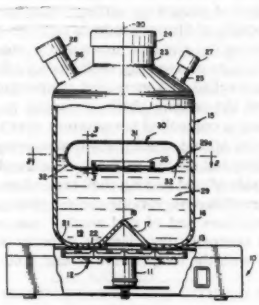
FLOATING MAGNETIC STIRRER FOR CULTURE MEDIUM

Norman A. de Bruyne, Princeton, N.J., assignor to Techne Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 386,764, Jun. 9, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 432,128

Int. Cl.³ B01F *13/08*

U.S. Cl. 366—274 **32 Claims**



1. A stirrer apparatus for stirring a liquid medium in a flask comprising:

(a) a flask for holding liquid medium,

(b) stirrer means for stirring substantially all of the liquid medium in the flask comprising an element of magnetically attractable material, and buoyant means for supporting said element in the liquid medium in the flask, said element and said buoyant means having a density less than the density of the liquid medium, and

(c) means for causing said stirrer means to rotate while supported in the liquid medium generally about an axis substantially perpendicular to the surface of the liquid medium, said axis extending through said stirrer means,

whereby the stirrer means is rotated by said rotating magnetic field and effects the stirring of substantially all of the liquid medium in the flask.

4,498,786

APPARATUS FOR MIXING AT LEAST TWO INDIVIDUAL STREAMS HAVING DIFFERENT THERMODYNAMIC FUNCTIONS OF STATE

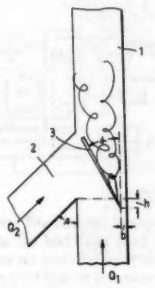
Hans Ruscheweyh, Aachen, Fed. Rep. of Germany, assignor to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 318,722

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043239

Int. Cl.³ B01F *5/00*

U.S. Cl. 366—336 **5 Claims**



1. In a device for mixing at least two individual gas flow streams, the individual streams each defining a flow cross-section and a main direction of flow and discharging into each other via at least one discharge mouth, and at least one embodiment arranged in the flow cross section of a corresponding of the individual streams, the improvement wherein

the element is a substantially, delta-shaped flat plate having planar surfaces and a sharp and free upstream V-shaped edge defining an upstream vertex and two portions of said edge on respective sides of said vertex, each of said two portions defining a sharp edge in cross-section,

said surfaces of said plate being oriented inclined at a relatively small acute angle relative to said main direction of flow of the corresponding individual stream,

said two portions of said edge extending transversely inclined to said main direction to flow of the corresponding individual stream, wherein

said two portions of said edge producing therefrom within the flow cross section of said corresponding individual stream two continuous vortex momentums respectively initiating two conically widening oppositely rotating vortexes from each of said two portions of the edge, respectively, the vortexes travelling from the respective portions downstream and inclined relative to said main direction of flow while widening conically including transversely to the main direction of flow of said corresponding individual stream, extending into the flow cross section of at least one other of the individual streams, and effecting, substantially exclusively via said vortexes, mixing of said corresponding individual stream with said other of the individual streams.

4,498,787

REMINDER

Lin Jung-Sun, No. 150-2, Hsi Ta Wang, Hsi Wang Tsun, Yung Kang Hsiang, Tai, Taiwan

Filed Jul. 31, 1984, Ser. No. 636,174

Int. Cl.³ G04B *47/00, 21/08*

U.S. Cl. 368—10 **7 Claims**

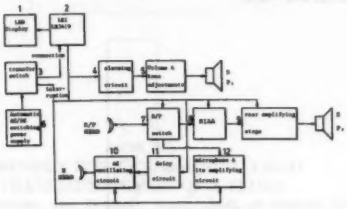
1. A reminder comprising:

a tape recoder capable of recording therein a tape recording of which something to be done at some time is reserved;

a clock electrically connected to said tape recoder, capable of time setting and adapted to be electrically connected to a power supply;

an alarming unit having an alarming circuit and a buzzing speaker and electrically connected to said clock so that said speaker can buzz when said time at which it is set in said clock arrives; and

two interlinking switches one of which is electrically connected to said alarming circuit which is energized and de-energized by said power supply respectively when said



one switch is switched on and off respectively, and the other of which is kept switched off and on respectively when said one switch is switched on and off respectively, and electrically connected to said tape recorder which can be energized and de-energized respectively, when said the other switch is kept switched on and off respectively

whereby said speaker will buzz when said time set in said clock arrives and when said one switch is switched off and said the other switch is switched on and thus said tape recorder will play to reproduce said tape recording to remind one to do said something.

4,498,788

ESCAPEMENT FOR A TIMER

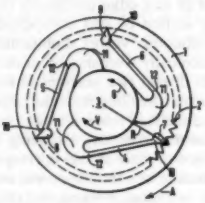
Horst Grimmer, Nurnberg-Oberasbach, and Alfred-Günther Lunz, Nuremberg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed May 31, 1984, Ser. No. 615,894

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320242

Int. Cl.³ G04F *7/00*

U.S. Cl. 368—106 **10 Claims**



1. In an escapement for a timer including a driving member for actuation of a time switching component which is manually settable relative to the driving member in one direction of rotation against a larger moment of resistance than in the other direction of rotation, said escapement including a ring having an internal toothing coupled with the driving member, and a ratchet wheel arranged coaxially with the ring and being connected with said time switching component secured against rotation relative thereto, said ratchet wheel having at least two arms located in the plane of said ring, each said arm having a finger having tooth sides spring-elastically radially engaging into the internal toothing, and having an operative pairing therewith, wherein said finger is forced out of the inner toothing during displacement in one or the other direction of rotation; the tooth sides of said operative pairing being angularly symmetrical relative to the radius of the ring; the improvement comprising in that one of said pairing components includes tooth sides of which one extends at a more acute angle relative to the radius than the tooth sides of the other pairing component, each said arm having a substantially constant cross-section along the entire length thereof and which spring-elastically bends radially and inwardly responsive to a manual displacement of the ratchet wheel through the time switching component in one or the other direction of rotation.

4,498,789

METHOD OF AND APPARATUS FOR MEASURING SURFACE TEMPERATURE OF MOVING OBJECTS, PARTICULARLY MEASURING THE TEMPERATURE OF FIBROUS PRODUCTS PARTICULARLY OF WIRES DURING PRODUCTION

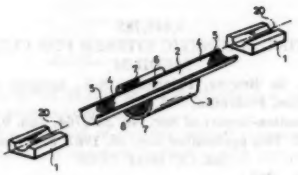
László Kiss; Árpád Faludi, both of Budapest; Gyula Gróf, Kesztölc; László Bolyó, Budapest; Csaba Szölgyén, Budapest; István Mihádák, Budapest, and Imre Varga, Budapest, all of Hungary, assignors to Hiradástechnikai Gépgyár, Hungary

Filed Oct. 25, 1982, Ser. No. 436,401

Claims priority, application Hungary, Oct. 23, 1981, 3111/81

Int. Cl.³ G01K *7/00*

U.S. Cl. 374—164 **10 Claims**



1. A method of measuring surface temperature of moving objects, especially of fibrous products or wires during production, comprising the steps of: arranging a moving object to move past one side of a sensing shell having a first and second surface of controlled and measured temperature, and past a cold point of the sensing shell; arranging in compensating element having a controlled temperature over said cold point on another side of said sensing shell; measuring the temperature of said first and second surfaces, of said cold point and of said another side of said sensing shell and, when their temperature values are different, varying the temperature of said first and second surfaces and of said another side of said sensing shell by said compensating element in order to equalize the temperatures with the temperature of said cold point.

4,498,790

BUSHING SECURING APPARATUS

James E. Fisher, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 21, 1983, Ser. No. 553,935

Int. Cl.³ F03D *11/04*; F16C *33/02*

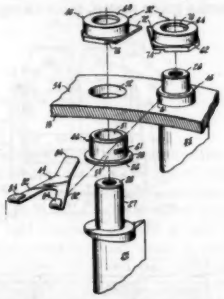
U.S. Cl. 384—428 **3 Claims**

1. A bushing assembly comprising:

wall means having a pair of adjacent circular openings therethrough, each of said openings having an axis, said wall means having first and second oppositely facing surfaces;

first and second bushing means, each including a cylindrical bearing disposed, respectively, within one of said cylindrical openings and axially concentric therewith, said cylindrical bearings each extending beyond said first surface of said wall means, each of said bushing means including means for preventing movement of said bearings in a first axial direction from said second toward said first surface through said circular opening, said bearings each having

an outer cylindrical surface with a slot therein and an inner cylindrical bearing surface, each slot being spaced immediately above said first surface of said wall means, said slot in one of said bearings being in facing relationship to said slot in said other of said bearings, each bushing means including a separate retainer cap having an external wall surface and an internal cylindrical surface surrounding and in contact with said outer cylindrical surface of its respective bearing, each cap having a bottom surface in contact with said first wall surface, each cap also including an elongated notch in its bottom surface, said notch cutting through said internal cylindrical surface of said cap defining a cutout aligned with said slot in said bearing, said notch also including a rear surface, said rear surface being in facing relationship to said rear surface of said notch in said cap of said other one of said bearings;



a sheet metal tablock disposed between said first and second bushing means, said tablock including a pair of oppositely facing edges, one of said edges being disposed in said notch and engaging said slot of said first bushing means, said other of said edges being disposed in said notch of said second bushing means and engaging said slot in said second bushing means, each of said retainer caps including flange means extending radially outwardly from said external wall surface, said flange means overlying said tablock, said tablock including a plurality of tabs folded over said flange means of each of said caps wherein said tablock is trapped in position between said first and second bushing means and prevents movement of said first and second bushing means in a second axial direction opposite said first axial direction and also prevents rotation of both bushing means.

4,498,791

PRINTER HAVING IMPROVED STORED ENERGY PRINTHEAD

Don M. Gilbert, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 28, 1983, Ser. No. 479,548

Int. Cl.³ B41J 3/12

U.S. Cl. 400—124 **15 Claims**

1. A multicopy printer for printing desired impressions on a print medium, comprising:

(a) a movable printhead carriage assembly for traversing the print medium; and

(b) a wire matrix printhead mounted on the printhead carriage assembly, comprising:

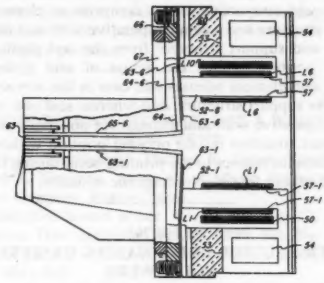
a plurality of print members, each having an impression end and an activation end,

front bearing means through which the impression ends pass, disposed in a confronting relation to the print medium,

magnetizable resilient means connected to each of the activation ends,

stored energy magnetic means positioned to provide an attracting force to flex the magnetizable resilient means, thereby setting the print members for activation,

a plurality of print member magnetic means associated with each of the print members, respectively, to selectively provide an attracting force in the opposite direction from that of the stored energy magnetic means thereby reducing its attracting force by a predetermined amount to rapidly release the selected flexed magnetizable resilient means, driving the associated print member impression end into contact with the print medium, and



opposing magnetic means, positioned to selectively oppose the attracting force of the stored energy magnetic means and connected to provide a strength of magnetic field that is directly proportional to the number of print member magnetic means selected, thereby reducing the resultant concentrated attracting force of the stored energy magnetic means in the unselected magnetizable resilient means.

4,498,792

PRINTING AND/OR CORRECTING DEVICE FOR PRINTING MACHINES

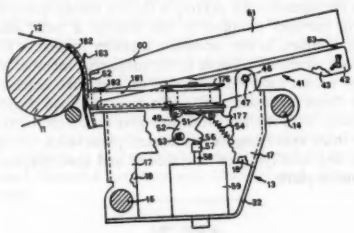
Remo Falconieri, S.Giorgio C., Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 58,201, Jul. 17, 1979, abandoned. This application Apr. 9, 1982, Ser. No. 367,003

Claims priority, application Italy, Jul. 18, 1978, 68696 A/78

Int. Cl.³ B41J 35/22

U.S. Cl. 400—214 **32 Claims**



1. A printing and correcting device for printing machines comprising a platen including a printing point; a support structure for supporting a printing field and a correcting field and locating the correcting field beneath the printing field; means supporting said support structure to move the printing field and the correcting field from a rest position allowing the printing point to be seen to a printing position, locating the printing field in front of the printing point for the printing of characters and to a correcting position locating the correcting field in front of the printing point for the correcting of printed characters; spring means to hold the support structure in the rest

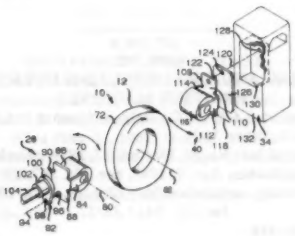
position; first and second electromagnetic actuators each actuatable from an inoperative state through a substantially identical working stroke for moving the support structure to the printing and the correcting position, respectively; and means selectively connecting said first electromagnetic actuator with said support structure for converting the working stroke of the first electromagnetic actuator to the movement of the support structure to the printing position in the inoperative state of the second electromagnetic actuator and for releasing said support structure from said first electromagnetic actuator in the inoperative state of the first electromagnetic actuator and in the operative state of the second electromagnetic actuator, wherein said connecting means comprise an element of said support structure and a cam cooperative with said element for moving said support structure from the rest position to the printing position against the action of said spring means, wherein said element releases said cam in the correcting position of the support structure, and wherein said cam comprises a slot cooperative with said element for positively positioning the support structure in said printing position without ribbon oscillation with respect to the printing point during the operative state of said first electromagnetic actuator.

4,498,793

PRINTER SHUTTLE DRIVE HAVING CASTERED CAM FOLLOWERS

Gordon B. Barrus, San Juan Capistrano; Leo J. Emenaker, El Segundo; Glen R. Radke, Westminster; Norman E. Farb, Villa Park, and Gerold Holzer, Costa Mesa, all of Calif., assignors to Printronix, Inc., Irvine, Calif.

Filed May 12, 1983, Ser. No. 493,818
Int. Cl.³ B41J *25/28*
U.S. Cl. 400—320 **10 Claims**



1. An arrangement for driving a printer shuttle comprising a mounting member coupled to the shuttle, a yoke assembly pivotally coupled to the mounting member to permit rotation of the yoke assembly relative to the mounting member about a first axis, a cam follower mounted on the yoke assembly for rotation about a second axis, and a rotatable cam disposed in engagement with the cam follower and mounted for rotation about a third axis lying in a common plane with the second axis, the first axis lying on one side of and spaced-apart from the common plane.

4,498,794

PRINTER FEEDER

Helmut K. Waibel, Fremont, Calif., assignor to Durango Systems, Inc., San Jose, Calif.

Filed May 21, 1984, Ser. No. 612,366
Int. Cl.³ B41J *13/10*
U.S. Cl. 400—629 **12 Claims**

1. A self-feeding feeder for use with a printer having a driven feed roller disposed about a drive shaft for frictionally engaging and advancing individual cut sheets of print media, comprising

a friction feed gear secured to said feed roller and coaxially therewith about a common drive shaft, the feed gear having a lesser diameter than the diameter of said feed roller;

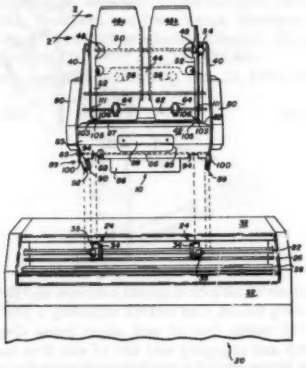
a mounting means for removably mounting about a printer;

an input media support means attached to the mounting means for supporting a plurality of sheets of media to be printed, the input media support means being vertically oriented, substantially L-shaped and of a width slightly greater than the width of the print media;

pivotable media guide means mounted on the mounting means and including a generally vertically oriented plate having at each outside lateral end a raised portion extending perpendicularly outward from the plane of the guide means, the media guide means resting within the input media support means and adapted for guiding a plurality of sheets of the media;

means for biasing the media guide means away from the input media support;

locking means attached to the mounting means and contacting the media guide means, the locking means being positional and having a first position wherein the media guide means is urged against the input media support and a second position wherein the media guide means is urged by the biasing means away from the input media support;



a first drive shaft and plurality of drive rollers rotatably attached to the mounting means and positioned over the input media support and media guide means wherein when the locking means is in the second position the guide means and the plurality of sheets of media contained therein will be urged against the drive rollers, the first drive shaft including driving means for transferring rotary motion from the friction feed gear to the drive rollers whereby the plurality of individual sheets of media may be driven thereby; and

media stripper means, pivotably attached to each outside edge of the media guide means and extending laterally below the media guide means and further including a vertically oriented flag disposed above the lower edge of the guide means near the lateral edges thereof.

4,498,795

SEMIAUTOMATIC PAPER SETTING SYSTEM

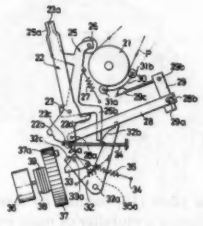
Yoshikuni Tatara, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 12, 1982, Ser. No. 433,920
Claims priority, application Japan, Oct. 12, 1981, 56-162515
Int. Cl.³ B41J *13/02*
U.S. Cl. 400—637.1 **16 Claims**

1. A method for semiautomatically setting a sheet of paper in a device such as a typewriter and printer prior to an operation of printing information on said sheet, said device including a platen roller around which a sheet of paper is to be set, a carriage which is provided reciprocatingly movably along its

travelling path defined in parallel with said platen roller, said carriage being provided with a print head for forming printed information on said sheet and means including a paper guide for guiding the advancement of said sheet around said platen roller during the paper setting operation, and a control unit for controlling the semiautomatic paper setting operation, said method comprising the steps of:

moving said carriage to a first predetermined position which is approximately at the center of said sheet of paper across its widthwise direction under the control of said control unit when a paper setting initiation signal is supplied thereto;



advancing said sheet around said platen roller over a predetermined distance under the control of said control unit when a line-feed control signal is supplied thereto after having the leading edge of said sheet inserted into said printer with said carriage located at said first predetermined position whereby said sheet is properly located between said platen roller and said paper guide; and

moving said carriage to a second predetermined position along said travelling path thereby completing the paper setting operation.

4,498,796

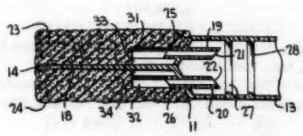
SURGICAL SCRUB

Marvin Gordon, East Windsor, and Joseph Lichtenstein, Colonia, both of N.J., assignors to Whitman Medical Corporation, Clark, N.J.

Continuation-in-part of Ser. No. 435,335, Oct. 19, 1982, , which is a continuation-in-part of Ser. No. 298,246, Aug. 31, 1981, Pat. No. 4,415,288, and a continuation-in-part of Ser. No. 241,486, Mar. 9, 1981, abandoned. This application Mar. 17, 1983, Ser. No. 476,348

Int. Cl.[3] **A47L** *13/17;* **A61M** *35/00*

U.S. Cl. 401—132 **28 Claims**



1. A surgical scrub device comprising:

an absorbent compressible applicator member;

an elongated hollow handle member having first and second longitudinally-spaced ends, said first end being open, said second end being at least partially disposed in said absorbent applicator member, said handle member being adapted to receive an elongated fluid-containing cartridge in longitudinally slidably relation within said handle member, said cartridge having a rupturable forward end by which it is insertable into said open first end of said handle member; and

first and second transversely spaced hollow spikes disposed inside said handle member proximate said second end, each spike having a pointed end projecting longitudinally toward said first end, each hollow spike providing flow communication from within said handle member to within said applicator member through said second end of said handle member;

wherein said spikes are positioned to provide two transversely-spaced punctures in said forward end of said cartridge in response to a predetermined slidable insertion of said cartridge in said handle member;

wherein said spikes include respective projecting portions which project in spaced relation externally of said hollow handle member beyond said second end; and

wherein said applicator member has first and second flow passages in the form of respective first and second bores defined therein oriented to receive respective projecting portions of said spikes, each flow passage extending beyond its received projecting spike portions.

4,498,797

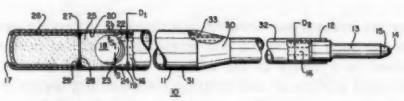
PRESSURIZED CARTRIDGE FOR A WRITING INSTRUMENT

Henry Peper, Marblehead; Thomas E. Eaton, Topsfield, and Edward J. Ferguson, Avon, all of Mass., assignors to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 39,705, May 17, 1979, abandoned. This application Jan. 22, 1980, Ser. No. 114,157

Int. Cl.[3] **B43K** *7/00, 7/10;* **C09D** *11/18*

U.S. Cl. 401—141 **1 Claim**



1. A pressurized cartridge for a writing instrument comprising:

a paste-like ink having a yield value; a tubular reservoir having an inner wall for containing said ink;

ink dispensing means connected to one end of said reservoir for dispensing said ink;

follower means loosely disposed within said reservoir to float partially submerged in said ink and be separated from said reservoir wall to form a channel for containing said ink and causing plug flow while said ink is being dispensed, said follower means having a radius of 0.008 to 0.016 inch less than the radius of said inner wall, said follower means being shaped to reduce viscous drag between said follower means and said ink contained in said channel, the wettability of said follower means by said ink being greater than the wettability of said inner wall; and compressed gas contained in a chamber at an opposite end of said reservoir for forcing said ink to move toward said ink dispensing means and said follower means to move with said ink wherein said compressed gas chamber includes a cup-shaped plug having a chamfered end sealed in position at said opposite reservoir end by an adhesive bead disposed between said chamfer and said reservoir wall.

4,498,798

LOCATING PIN

Donald C. Day, Sugar Grove, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

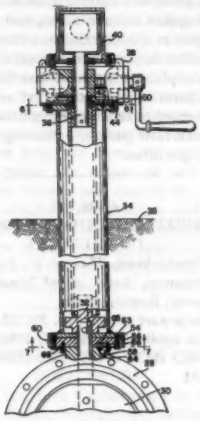
Filed Sep. 26, 1983, Ser. No. 535,570

Int. Cl.[3] **F16B** *13/00*

U.S. Cl. 403—24 **3 Claims**

1. A valve operating assembly comprising: a valve body, a valve platform affixed to the valve body, an adapter plate joined to the valve platform, a support column lower plate joined to said adapter plate, a support column having a lower end affixed to the support column lower plate and an operator

attached to the upper end of the support column, wherein said adapter plate is bolted to said valve platform and the said operator is bolted to an upper plate affixed to the upper end of said support column and proper alignment of the bolted parts is obtained by at least one locating pin having a threaded



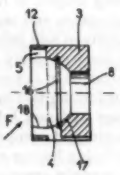
portion irremovably secured in a threaded receiving opening on one such part and a non-threaded cylindrical portion received in a cavity in the adjacent part bolted thereto, said threaded portion of said locating pin including means to lock said pin against further rotation in the threaded receiving opening whereby it is secured against removal.

4,498,799

BALL AND SOCKET JOINT AND METHOD OF FORMING IT

Claude Wartelle, and Charles Favey, both of Gouvieux, France, assignors to Centre Technique Des Industries Mecaniques, Senlis, France

Filed Aug. 17, 1981, Ser. No. 293,180
Claims priority, application France, Aug. 20, 1980, 80 18177
Int. Cl.³ F16C *11/06*
U.S. Cl. 403—140 **10 Claims**



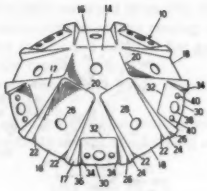
8. A ball and socket joint assembly comprising a ball head on the end of a rod, an externally cylindrical seating member, a part-spherical socket in said seating member having a surface larger than a hemisphere for receiving said ball head, a mouth for said socket in said seating member coaxial with the external cylindrical surface of said member, a set of circumferentially spaced radial slits in said seating member extending radially from said socket to the external surface of said seating member and axially from said mouth at least as far as a plane passing through the center of said socket and extending perpendicular to the axis of said external cylindrical surface of said seating member, a further component, a cylindrical recess in said component adapted to receive and fit said seating member, and means for squeezing and holding said seating member around said mouth comprising an external hoop-like clamping ring around said seating member adjacent said mouth.

4,498,800

JUNCTION PLATE

Ulrich Sielaff, Madison, Wis., assignor to United Steel Products Company, Montgomery, Minn.

Filed Dec. 13, 1982, Ser. No. 449,173
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—172 **7 Claims**



1. A junction plate (10) formed by stamping from a metal disk and for securing a plurality of main struts (50) together to form a polygonal geodesic structure, the junction plate (10) comprising:

a flat central portion (14);

a skirt portion (17) of the plate (10) formed into a generally frusto-conical shape extending from the periphery of the plate to the central portion (14);

a plurality of main strut channels (18) formed into the skirt portion (17) of the plate extending radially outward from the central portion (14), each of the main strut channels (18) bent relative to the central portion (14) by a first angle relative to said central portion, said first angle selected so that said main strut channels (18) are generally parallel to the main struts (50),

an auxiliary strut channel (30) formed into the skirt portion (17) between each of the main strut channels (18), the auxiliary strut channels (30) being bent at a second angle relative to said central portion (14), said second angle selected so as to be generally parallel to the adjacent face of the polygonal geodesic structure defined by the corresponding main struts so that an auxiliary strut (52) inserted to support that face can be easily secured in the auxiliary strut channel (30) of the plate with a minimum of shaping to the auxiliary strut (52).

4,498,801

RIDGE RAFTER CONNECTOR

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Continuation of Ser. No. 223,817, Jan. 9, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,156
Int. Cl.³ B25G *3/00*; E04B *1/41*
U.S. Cl. 403—232.1 **3 Claims**

1. In combination, a ridge board, a pair of rafters located on opposite sides of said ridge board, said rafters being secured to said ridge board by a pair of matching rafter connector adapted to secure said rafters to said ridge board, and to locate and maintain said rafters in axial alignment to each other; said connectors each comprising:

a. a flange member having a top portion adapted for connection to a top face of said ridge board and lower portions adapted for connection to a side face of said ridge board;

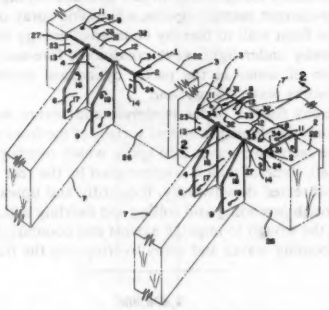
b. a back portion connected to said flange member and adapted for registration with said side face of said ridge board;

c. a side member connected to said back portion and adapted for connection to said rafter;

d. said flange member is formed with fastener openings for receiving fasteners therethrough for attachment of said

connector to said rafter, and said top portion and said lower portion of said flange member are formed with fastener openings for receiving fasteners therethrough for attachment of said connector to said top face and said side face respectively of said ridge board;

e. said flange member is formed with a straight line bend line connecting said top and lower portions which intersect the edge only of said back portion and said side members so as to permit said flange to be bent at an infinite number of angles from a planar condition;



f. said top portion of said flange member is formed with a distal edge having an irregular edge pattern forming a plurality of protruding portions and a plurality of indent portions with a fastener opening in at least one of said protruding portions; and

g. said protruding and indent portions in said irregular edge of said flange are located so as to interfit with said protruding and indent portions in said irregular edge of said flange of said matching rafter connector when installed on opposite sides of said ridge board.

4,498,802

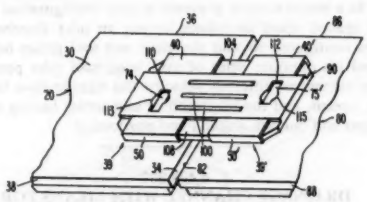
COUPLING ARRANGEMENT

Mark J. Del Tufo, Basking Ridge; Ralph J. Lake, Jr., Somerville, and Stephen R. Solomon, Cranford, all of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 29, 1983, Ser. No. 537,264

Int. Cl.³ F16B *1/00*

U.S. Cl. 403—300 **7 Claims**



1. Coupling apparatus comprising

first and second members to be coupled together,

each member carrying first means for receiving a coupling member and second means for providing locking engagement with a coupling member, and

a coupling member having two ends, each end being adapted to engage and couple to one of said first means whereby said first and second members can be rigidly coupled together,

said first and second members and said coupling member having longitudinal axes which are all aligned when said first and second members and said coupling member are coupled together,

said coupling member comprising a relatively rigid metal plate having two openings positioned transverse to said axis to receive portions of each of said two members to provide locking engagement therewith, one opening lying primarily on one side of the longitudinal axis of said plate and the other opening lying primarily on the other side of the longitudinal axis of said plate,

one opening in said coupling member being adapted to receive a second means of said first member, and the other opening in said coupling member being adapted to receive a second means of said second member.

4,498,803

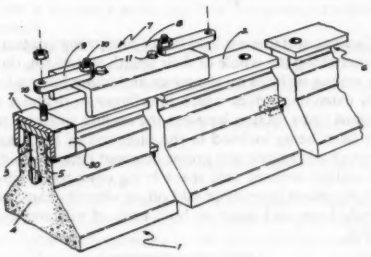
MOVEABLE LANE BARRIER LOCKING SYSTEM

John P. Quittner, Castle Cove, Australia, assignor to Quicksteel Engineering Pty. Ltd., Botany, Australia

Continuation-in-part of Ser. No. 485,622, Apr. 18, 1983, , which is a continuation-in-part of Ser. No. 344,755, Feb. 1, 1983, abandoned. This application Jun. 29, 1983, Ser. No. 509,184

Int. Cl.³ E01F *13/00*

U.S. Cl. 404—6 **11 Claims**



1. A transferable roadway lane divider comprising

a plurality of upstanding divider sections, each having a base and an upper end, disposed in closely spaced and tandem relationship relative to each other to form a barrier,

connecting means for pivotally connecting adjacent divider sections together for permitting them to pivot laterally relative to each other,

transfer means formed in unobstructed relationship longitudinally throughout the entire length of the upper end of each divider section and aligned with the transfer means of a next adjacent divider section for receiving a common transfer apparatus to permit said divider sections to be lifted and suspended above a roadway for transfer thereon,

lock means longitudinally bridging and engaging at least one pair of said divider sections for preventing them for pivoting laterally relative to each other, and

guide means for reciprocally mounting said lock means for vertical movements on at least said pair of divider sections to selectively release said lock means from engagement with said pair of divider sections to permit said pair of divider sections to pivot laterally relative to each other.

4,498,804

MANHOLE/ACCESS COVER AND FRAME ASSEMBLIES

Derek Ferns, Monmouth, Wales, assignor to Selflevel Covers (Jersey) Limited, Jersey, Channel Islands

Filed Jan. 19, 1983, Ser. No. 459,095

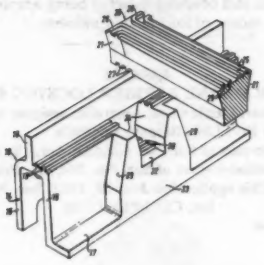
Claims priority, application United Kingdom, Jan. 20, 1982, 8201582

Int. Cl.³ E02D *29/14*

U.S. Cl. 404—25 **12 Claims**

1. A manhole/access cover and frame assembly wherein the

cover is supported on the frame by at least one pair of downwardly facing, oppositely inclined support surfaces on the cover which are engageable respectively with corresponding upwardly facing, oppositely inclined support faces on the frame, and wherein the cover has a substantially continuous downwardly facing peripheral sealing surface which, when the cover is supported on the frame, overlies a substantially continuous upwardly facing peripheral sealing surface on the frame, the engagement between the aforesaid support surfaces so locating the cover with respect to the frame that said peripheral sealing surfaces are held out of supporting contact with on another along the whole of their length and width, the peripheral sealing surfaces on the cover and frame having longitudinally extending ridges which interfinger to define a space of tortuous cross section between the sealing surfaces, said support faces being inclined in the direction of the longitudinal extent of said ridges, and grease disposed between said peripheral sealing surfaces, said space being open to the ambient in both directions laterally of said ridges whereby said grease can extrude from said space at both ends of said tortuous cross section.

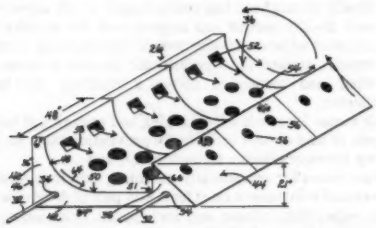


4,498,805

BREAKWATER MODULE AND MEANS FOR PROTECTING A SHORELINE THEREWITH

Frederick E. Weir, c/o Epernay Properties, Inc., R.R. #3, Spring Green, Wis. 53588

Filed Nov. 29, 1983, Ser. No. 556,004
Int. Cl.³ E02B *3/06*
U.S. Cl. 405—31 **12 Claims**



1. A breakwater module adapted to be placed with other like modules in water in a line offshore from a water front for preventing erosion due to wave action and for rebuilding water front property where erosion has already occurred, said module comprising:

an elongated body having a bottom base wall adapted to be supported on the ground bed below the water and having rear and front end walls facing onshore and offshore, respectively, said body having a single, large, upwardly-concave, wave-energy-absorbing trough of partly cylindrical contour the rear and front margins of which comprise cylindrical and flat horizontal surfaces extending along the rear and front end walls respectively;

said front end wall having an upwardly and rearwardly sloping front end surface to break incoming waves into spray and deflect it upwardly over the trough;

said rear end wall being substantially higher than said front wall to intercept waves and spray overtopping the front wall with said cylindrical surface and to re-direct them to cause water to move with a rolling and swirling action downwardly and forwardly along said cylindrical surface and forwardly along said flat horizontal surfact to erupt vertically along said front end wall and impinge in a counter-current manner against waves and spray overtopping the front wall to thereby counteract energy therein;

whereby under light wave conditions, fore-and-aft oscillation of water in the partly cylindrical contour trough absorbs wave energy; and

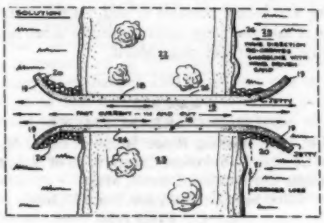
whereby further under moderate and severe wave conditions, the sloping front end surface of the front wall breaks the incoming waves into spray which overtops the front wall, some of which is intercepted by the rear wall and is re-directed downwardly, forwardly and upwardly in the trough providing said rolling and swirling action of water in the trough to impinge against and counteract energy in incoming waves and spray overtopping the front wall.

4,498,806

BEACH EROSION PREVENTION JETTY CONFIGURATION

Henry H. Szonnell, 2401 Georgetown Rd., Bradenton, Fla. 33507

Filed Jul. 12, 1983, Ser. No. 513,061
Int. Cl.³ E02B *3/08*
U.S. Cl. 405—34 **9 Claims**



1. In a beach erosion prevention jetty configuration for use with spaced apart shorelines having an inlet therebetween, jetties contiguous to said shoreline and said jetties being arranged on opposite sides of said inlet, said inlet permitting water current of different velocity and tides to flow between bays, oceans, and the like, each of said jetties having straight sections and curved, angling end portions.

4,498,807

DRAINAGE CHANNEL WITH MEANS FOR MAINTAINING PROPER SLOPE DURING INSTALLATION

Larry E. Kirkpatrick, and Barry C. Williams, both of Statesville, N.C., assignors to Polydrain, Inc., Troutman, N.C.

Filed Sep. 8, 1983, Ser. No. 530,271
Int. Cl.³ E02B *11/00*; E01C *11/22*; E01F *5/00*; E04G *17/00*
U.S. Cl. 405—43 **11 Claims**

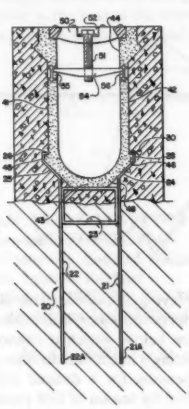
1. In a line, such as a drainage channel, for being embedded in a trench in concrete at a pre-determined slope, said line being defined by an elongate body having outer walls and inner, spaced-apart walls defining a fluid-carrying space therebetween, the improvement which comprises anchor means for maintaining proper slope during installation of the line in con-

crete by counteracting the buoyancy of the line, said anchor means including:

(a) at least one relatively long spike for being inserted into earth defining the trench;

(b) clasp means carried by said spike; and,

(c) connecting means carried by the outer walls of said channel for connecting to and cooperating with said clasp



means to retain the channel at its proper slope while the concrete is poured around the channel until the concrete hardens by preventing the channel from floating upwardly in the unhardened concrete; said connecting means comprising an outwardly projecting rib extending along the length of the channel and said clasp includes a detent for being placed over the upper surface of the rib in channel-retaining relation thereto.

4,498,808

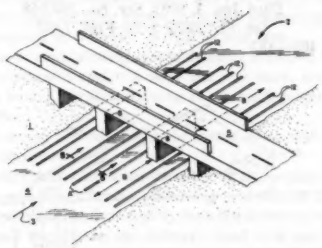
PROCESS FOR PREVENTION OF ICE BUILDUP AND REDUCTION OF ICE FORCES ON STRUCTURES DURING BREAKUP

Victor Manikian, and Giles N. McDonald, both of Anchorage, Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 28, 1983, Ser. No. 479,416

Int. Cl.³ E02B *3/00, 15/02*

U.S. Cl. 405—61 **4 Claims**



1. In a method for aiding the prevention of ice buildup at a structure in a body of flowing water when the ice cover on said body of water starts to melt and breakup, the improvement comprising:

forming at said structure a plurality of side-by-side, essentially parallel slots in said ice cover before substantial melting of same, said slots being oriented so that the longitudinal axis of same is essentially parallel to the longitudinal axis of the flow of said body of water said slots extending a substantial distance both upstream and downstream of said structure and a substantial distance into the thickness of said ice cover, said slots being spaced from one another a distance such that if upon thawing the ice cover breaks apart at said slots the width of the resulting ice floes will readily pass by said structure.

4,498,809

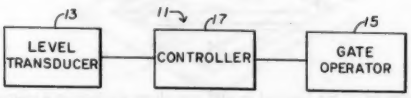
FLOW COMPENSATED COMPUTING CONTROLLER

Edward J. Farmer, 839 Shoreside Dr., Sacramento, Calif. 95825

Filed Jun. 20, 1983, Ser. No. 505,941

Int. Cl.³ E02B *7/20, 7/40*

U.S. Cl. 405—92 **8 Claims**



1. A flow compensated controller for use in controlling the position of a control gate in an open channel in order to maintain the water level either upstream or downstream from said control gate at a desired level, said flow compensated controller comprising:

a. a first input port for receiving an electrical signal related to the actual water level,

b. an input amplifier for amplifying said signal received at said first input port,

c. a second input port for receiving an electrical signal corresponding to the desired level,

d. a set point amplifier for amplying said signal received at said second input port,

e. an error amplifier coupled to the output of said input amplifier and said set point amplifier for generating an error signal corresponding to the difference between said output of said input amplifier and said set point amplifier,

f. a proportional amplifier coupled to the output of said error amplifier means for generating an output signal proportional to the output signal of the error amplifier,

g. an automatic reset unit coupled to the output of the error amplifier for integrating the output signal of the error amplifier and providing an output indicative thereto,

h. a summing amplifier for summing the output signals of the error amplifier and the automatic reset unit,

i. a motor modulation driver coupled to the output of the summing amplifier for generating a modulated control signal for driving the gate operator,

j. a first relay coupled to the output of the motor modulation driver for moving the gate in one direction,

k. a second relay coupled to the output of the motor modulation driver for moving the gate in another direction,

l. a third relay coupled between said first and second relays and said gate operator,

m. a time proportioning comparator coupled to the input of said automatic reset unit automatic reset unit and coupled to said third relay, and

n. an oscillator for driving said time proportioning comparator.

4,498,810

COLLAPSIBLE RUBBER DAM

Tateo Muramatsu, Yokohama; Mamoru Kurihara, Tokyo, and Yasushi Enami, Yokohama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Feb. 27, 1981, Ser. No. 238,892

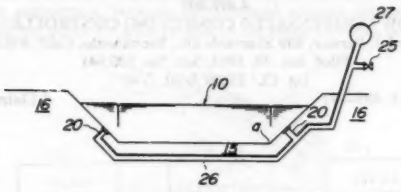
Claims priority, application Japan, Mar. 6, 1980, 55-27,273; Jun. 27, 1980, 55-87,480; Jul. 24, 1980, 55-100,477; Aug. 25, 1980, 55-115,817

Int. Cl.³ E02B *7/20*

U.S. Cl. 405—115 **5 Claims**

1. A collapsible rubber dam secured to a riverbed portion

and slope portions of both riverbanks only at an upstream side of a river and inflated and deflated by supply and discharge of a gas, comprising; a pipe for supply and discharge of said gas one end of said pipe communicating with the inside of said rubber dam from only at least one slope portion of said slope portions of both riverbanks exclusive of said riverbed portion securing said rubber dam, said end of the pipe for supply and



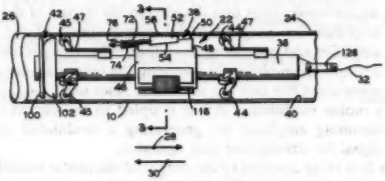
discharge of gas located in said one slope portion in a triangular region defined by a top end of said rubber dam located in said slope portion, a line connecting said top end of said rubber dam to substantially a middle position of a deflated width of said rubber dam along said riverbed portion, and a securing position of said rubber dam at a toe of the slope portion above an acceptable height of any remaining drainage in said rubber dam.

4,498,811

UNDERWATER PIPELINE SEALING APPARATUS

Derek T. Fern, Gretna, and Gary E. Harrison, Marrero, both of La., assignors to McDermott Incorporated, New Orleans, La.

Filed Feb. 17, 1982, Ser. No. 349,559
Int. Cl.³ F16L *1/04, 55/10*
U.S. Cl. 405—168 **18 Claims**



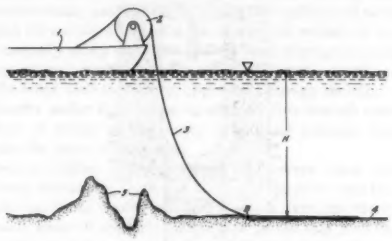
1. Apparatus for preventing flow of water from a first underwater pipeline portion forward of the apparatus to a second underwater pipeline portion rearward of the apparatus, the apparatus comprising: a carriage; at least one wedge-shaped member having a first surface for conforming to and engaging a pipeline internal wall and a second surface which slidably engages a complementary surface on said carriage, the spacing between said first and second surfaces increases from a lesser spacing at a forward portion of said member to a greater spacing at a rearward portion of said member; means for urging said member into gripping engagement with a pipeline wall upon application of force to said carriage in the rearwardly direction in a pipeline, said gripping means including spring means for urging said member first surface into sliding engagement with a pipeline internal wall during movement of the apparatus through a pipeline in a forwardly direction; and means responsive to water pressure from forwardly of the apparatus for sealing the pipeline against flow of water from the first underwater pipeline portion to the second underwater pipeline portion.

4,498,812

PROCESS FOR LAYING A SUBMARINE CABLE

Gianmario Lanfranconi, and Giuseppe Monti, both of Milan, Italy, assignors to Societa' Cavi Pirelli S.p.A., Milan, Italy

Filed Feb. 22, 1983, Ser. No. 468,501
Claims priority, application Italy, Feb. 22, 1982, 19785 A/82
Int. Cl.³ F16L *1/00*
U.S. Cl. 405—168 **9 Claims**



1. A process for laying an electric cable along an underwater course at the bottom of the water, said cable having a minimum radius of curvature below which it cannot be bent without damage and permitting a maximum distance between underwater points of suspension for a desired service life and said bottom being uneven by reason of first portions thereof which project above second, other portions thereof, said process comprising:

laying an elongated, flexible element different from said cable along said course;

adjusting the position of said element so that the radius of curvature thereof at any of said first projections encountered by said element is at least equal to said minimum radius of curvature of said cable;

adjusting the length of said element between underwater points of suspension thereof so that said length thereof is no greater than said maximum distance; and

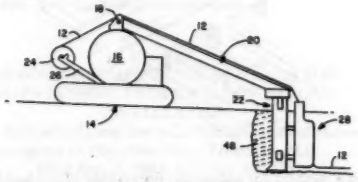
laying said cable alongside said element so that it follows the configuration of said element as adjusted.

4,498,813

UNDERGROUND CABLE INSTALLING APPARATUS AND METHOD UTILIZING A FLUID JET ASSISTED, VIBRATING BLADE ARRANGEMENT

Terry L. Nelson, Camas Valley, Oreg., and James M. Reichman, Issaquah, Wash., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 3, 1981, Ser. No. 269,968
Int. Cl.³ E02F *5/10*; F16L *1/02*
U.S. Cl. 405—182 **11 Claims**



1. An apparatus for installing cable underground, comprising: a power driven land vehicle; an elongated cable laying plow blade having a top end portion, a bottom end portion, and a forward facing cutting edge extending along the front edge of said bottom end portion; means including a plurality of nozzles positioned along said cutting edge for receiving fluid under pressure and directing said fluid through said nozzles to

form high impact fluid jets; means supporting said blade for movement with said vehicle in a way which places the bottom end portion of said blade in the ground with its cutting edge and said fluid jets disposed in the direction of movement of said vehicle; means including a supply of said cable supported on and movable with said vehicle; means for vibrating said blade at the natural frequency of said blade and means for feeding said cable from its supply downwardly along a path to the rear of said blade to a point to the rear of the bottom end portion of said blade and along the path taken by said blade.

4,498,814

RELEASABLE ANCHOR CONNECTOR FOR TENSION LEG PLATFORM

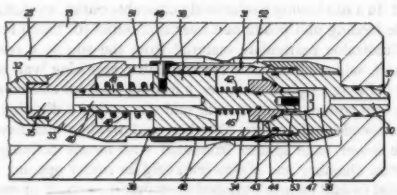
Arthur L. Brake, Winscombe, Eng'and, assignor to Vickers PLC of Vickers House, London, England

Filed Sep. 14, 1982, Ser. No. 418,011

Claims priority, application United Kingdom, Sep. 18, 1981, 8128307

Int. Cl.³ B63B *21/50*

U.S. Cl. 405—224 **8 Claims**



1. A releasable tether connector for mooring a tension leg platform, comprising:

an anchoring member secured to the sea bed;

a tether extending between the platform and the anchoring member and having means therein defining a hollow central first bore;

latching means attached at the lower end of the tether line, said latching means being constructed and arranged so as to be releasably fastened to the anchoring member;

a ram within said latching means, said ram being operative to release said latching means from said anchoring member in response to a supply of fluid to said ram;

portions of said latching means defining a second bore that communicates said ram with the first bore, said second bore having portions defining an inwardly projecting first shulder;

a fluid supply line adapted to be passed down said first bore in said tether;

a delivery had connected at a tip of the supply line that descends to a working position in said second bore;

sealing means that fluid-tightly seals the delivery head to the second bore when the delivery head is in said working position, so as to confine the pressure of the fluid to below the delivery head in a fluid flow direction; and

locking means in the delivery head, said locking means adapted to expand at a position upstream from said shoulder in response to passage of fluid through said supply line, said expanded locking means engaging said shoulder for holding the delivery head in said working position while fluid is fed under pressure into said ram to release said latching means.

4,498,815

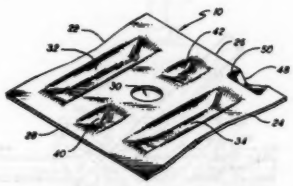
ROCK FORMATION SUPPORT PLATE

Lester L. Dye, Rinard Mills, Ohio, assignor to The Eastern Company, Naugatuck, Conn.

Continuation of Ser. No. 186,825, Sep. 12, 1980, abandoned, which is a continuation of Ser. No. 19,324, Mar. 12, 1979, abandoned. This application Oct. 15, 1982, Ser. No. 434,673

Int. Cl.³ E21D *21/00*

U.S. Cl. 405—259 **12 Claims**



1. A bearing plate having a first surface for supporting engagement with the surface of a rock formation surrounding a drill hole in which one end of an elongated rod is securely anchored, the other end extending outside the drill hole and having engagement means for supporting contact with a second surface of the plate, said plate comprising a unitary sheet of high-strength metal having:

(a) first and second major surfaces on opposite sides thereof:

(b) a plurality of elongated, parallel, mutually distinct and separated areas embossed in said plate to extend inwardly into said first major surface and outwardly from said second major surface, said first and second major surfaces forming substantially the entire surface areas of said plate other than in said embossed areas;

(c) a peripheral border;

(d) a substantially centrally disposed opening for loose passage of said rod;

(e) said embossed areas all being spaced inwardly from said border and spaced from said opening by a distance sufficient to accommodate said engagement means between said embossed areas, at least one pair of said areas lying on opposite sides of said opening; and

(f) substantially all of said first and second major surfaces lying respectively in first and second parallel flat planes, and entirely surrounding said embossed areas, said opening and said border, whereby substantially all of said first major surface may be placed in supporting engagement with said rock formation surface, with said engagement means in supporting contact with said second major surface entirely inwardly of said embossed areas.

4,498,816

MINE ROOF SUPPORT SYSTEM

Thomas Korpela, Oil City, and Joseph Subrick, Connellsville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1983, Ser. No. 526,259

Int. Cl.³ E21D *20/00, 21/00*

U.S. Cl. 405—259 **10 Claims**

1. A clip for use in a mine roof truss bolt system comprising:

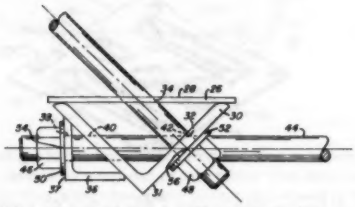
at least two ends aligned in a first plane for abutment against the mine roof;

a first downwardly extending portion having a planar surface facing away from the mine roof and inclined at an approximately 45° angle with respect to said first plane, said portion having a bore therethrough perpendicular to said inclined surface for receiving the lower end of an anchor member therethrough;

a second downwardly extending portion having a planar surface facing away from said inclined surface and substantially perpendicular to said first plane, said second

portion having a bore therethrough perpendicular to said substantially perpendicular surface for receiving one end of an elongated reinforcing member through the bore;

said bores for receiving the anchor member and reinforcing member having axes intersecting with said first and second surfaces at substantially the same distance in a normal direction from said first plane, said axes being displaced from each other in a second plane parallel to said first plane so as to prevent the intersection of said anchor member with said reinforcing member;



said first and second downwardly extending portions being rigidly connected in a third plane parallel to said first and second planes and spaced downwardly from said second plane;

said first and second downwardly extending portions having sufficient rigidity to permit the application of a force on each of said first and second surfaces of at least 5,000 pounds when the ends of said anchor and said reinforcing members are bolted down to bear on said first and second surfaces.

4,498,817

ROOF BOLTS FOR MINES AND THE LIKE WORKINGS

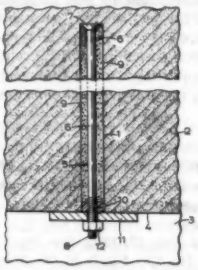
Bryon T. Oulsnam, Moon Fleet, Back Lane, Whiston, Near Cheadle, Stoke-on-Trent, Great Britain

Filed Mar. 2, 1983, Ser. No. 471,501

Claims priority, application United Kingdom, Mar. 4, 1982, 8206350

Int. Cl.³ E02D 5/74

U.S. Cl. 405—260 **9 Claims**



1. A method of installing a roof bolt in a mine or like working comprising the steps of forming a hole in the rock above the roof of the mine or like working, the hole extending upwards and its lower end communicating with the mine or like working, inserting a roof bolt into the hole, blowing incompressible particulate material into the hole, around the bolt, and preventing the material subsequently falling from the hole, said particulate material being such that relative movement can continue to occur between the particles so as to enable the particles to shift and settle and thereby anchor the bolt firmly in position.

4,498,818

DEVICE FOR BATCH FEEDING OF A FLUIDIZABLE PARTICULATE MATERIAL

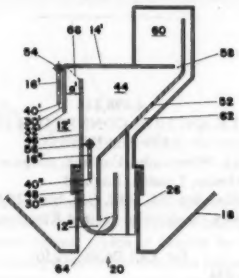
Gudmundur Bjarnason, Reykjavik, and Thorsteinn Eggertsson, Gardabae, both of Iceland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 359,266, Mar. 18, 1982, abandoned. This application Jun. 19, 1984, Ser. No. 622,241

Claims priority, application Switzerland, Mar. 30, 1981, 2130/81

Int. Cl.³ B65G 53/50

U.S. Cl. 406—137 **6 Claims**



1. In a silo having a selectively closeable outlet, an exchangeable feeding unit positioned over said outlet for batch feeding a fluidizable particulate material from the silo to a reaction vessel, said exchangeable feeding unit comprising wall means for defining a siphon chamber, a feeding shaft for communicating said siphon chamber with said silo outlet, a dividing wall positioned in said siphon chamber, said dividing wall having a free lower edge spaced from said wall means defining said siphon chamber and a nozzle having an outlet opening positioned in said siphon chamber such that the nozzle opening is above said lower edge of said dividing wall wherein said siphon chamber comprises an upper siphon chamber provided with nozzles, a charge space and a lower siphon chamber provided with nozzles wherein the nozzles in said upper siphon chamber and said lower siphon chamber can be actuated sequentially.

4,498,819

MULTIPOINT SLURRY INJECTION JUNCTION

Ahmed A. El-Saie, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Nov. 8, 1982, Ser. No. 439,671

Int. Cl.³ B65G 53/52

U.S. Cl. 406—181 **3 Claims**

1. A new use for an apparatus comprising:

(a) a chamber having a side wall, a substantial portion of which is conical, a top at its base, and a longitudinal axis;

(b) a first inlet means mounted through said top and aligned with said axis;

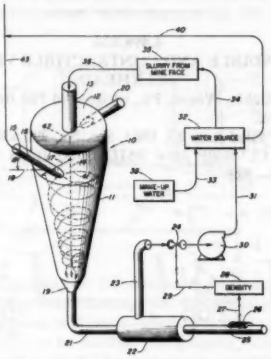
(c) a second inlet means mounted tangentially through said side wall and having an axis, the axis of said second inlet means forming an acute angle with a plane extending normal to the axis of said chamber;

(d) outlet means at the apex of said chamber and aligned with the axis of said chamber, said new use comprising a method of mixing the contents from at least a pair of pipelines;

said new use comprising:

(e) injecting a first fluid at a first pressure into said first inlet means;

(f) injecting a second fluid at a second pressure into said second inlet means; and



(g) removing said first and second fluids at said outlet means at said apex whereby said first and second fluids at different pressures are mixed together.

4,498,820

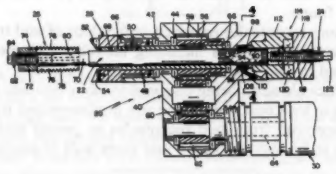
CUTTING TOOL

Albert T. Brennan, Sherborn, Mass., assignor to SMA Controls Inc., Medfield, Mass.

Filed Aug. 17, 1982, Ser. No. 409,012

Int. Cl.³ B23B 5/16

U.S. Cl. 409—179 **9 Claims**



1. A portable tube end cutting tool comprising a tool support shaft with an alignment assembly at one end for insertion into the tube whose end surface is to be machined,

ratchet structure fixed to said support shaft,

a cutter head assembly mounted for rotation about the axis of said support shaft,

a first drive for moving said cutter head assembly axially relative to said shaft, a second drive for driving said cutter head assembly in rotation, and

an actuation mechanism for said alignment assembly that includes an asymmetrical drive mechanism that includes selector structure with latch portions arranged for alternate engagement with said ratchet structure for rotating said support shaft in a predetermined direction to actuate said alignment assembly while allowing reset of said asymmetrical drive mechanism without movement of said support shaft in the opposite direction.

4,498,821

DEBURRING APPARATUS

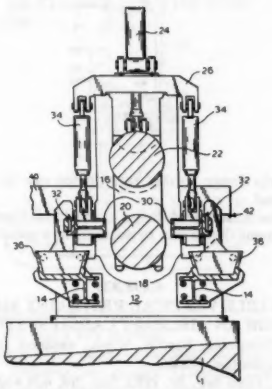
Joel Cazaux, Chelles, France, assignor to Fives-Cail Babcock, Paris, France

Filed Mar. 23, 1983, Ser. No. 478,058

Claims priority, application France, Apr. 6, 1982, 82 05918

Int. Cl.³ B23D 1/22

U.S. Cl. 409—300 **4 Claims**



1. An apparatus for deburring a product of continuous casting, the product having a surface with burrs thereon and extending in a longitudinal direction, which comprises

(a) a support frame including

(1) two vertical side plates extending in said direction, the side plates defining respective guides in alignment with each other in a direction transverse to the longitudinal direction and the guides having open ends, the guides extending downwardly from the open ends in a direction substantially perpendicular to the surface of the product, and

(2) crossbeams extending in the transverse direction and interconnecting the side plates,

(b) a girder having two ends glidably mounted in two transversely aligned ones of the guides,

(c) a burr cutter mounted on the girder,

(d) two superposed rollers defining a nip therebetween for passage of the product, the rollers being rotatable for displacing the product in the longitudinal direction and having journals glidably mounted in two additional ones of the transversely aligned guides,

(e) headers affixed to the support frame and respectively arranged in the vertical plane of a respective one of the side plates above the open ends of the guides,

(f) jacks linking the ends of the girder to the headers for moving the girder towards the surface of the product to apply the cutter to said surface, and

(g) additional jacks linking the upper roller to the headers for moving the upper roller towards the lower roller to clamp the product between the rollers.

4,498,822

SOLAR PANEL HANDLING AND MOUNTING DEVICE

Keyvan T. Diba, Los Angeles, Calif., assignor to Solir Corporation, Van Nuys, Calif.

Filed Feb. 14, 1983, Ser. No. 466,162

Int. Cl.³ F24J 3/02

U.S. Cl. 410—2 **19 Claims**

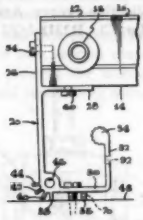
1. A handling and mounting device comprising:

a web forming the body of said device;

a bottom flange secured to said web at an angle with respect thereto;

a handgrip flange secured to said bottom flange at an angle

with respect thereto so that said handgrip flange can be manually grasped for manual handling thereof and handling of a panel secured to said device, attachment openings through at least one of said bottom flange and said



handgrip flange so that said device can be secured to a base; and

at least one attachment flange joined to said web so that said attachment flange can be secured to a panel.

4,498,823

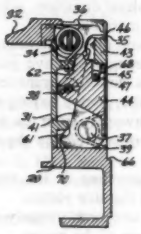
RETRACTABLE VERTICAL RESTRAINT MECHANISM FOR AN AIRCRAFT CARGO SYSTEM

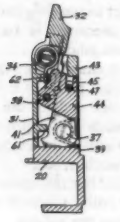
Robert D. Trautman, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1982, Ser. No. 428,433

Int. Cl.³ B64D *1/12*

U.S. Cl. 410—84 **11 Claims**





1. A latch mechanism comprising:

a retractable lip adapted to be hinged onto a support structure to pivot between a restraint position in which it extends essentially perpendicularly from the support structure, and a retracted position; resilient means to urge the lip into its retracted position; and at least one pawl assembly to control hinged movement of the lip, each pawl assembly including (a) a pivotal pawl member movable into locking engagement with the lip to prevent pivotal movement of the lip from said restraint position, and movable into latching engagement with the lip to prevent pivotal movement of the lip from the retracted position, (b) resilient means urging said pivotal pawl member into locking engagement with the lip, and (c) a pivotal lever to pivotally displace and hold the pawl member in a retracted position to thereby permit movement of the lip into its retracted position or into its restraint position.

4,498,824

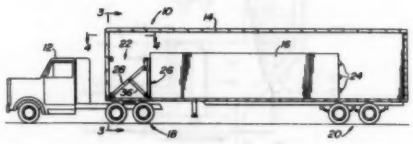
EXTENDIBLE AND CONTRACTIBLE VEHICLE BULKHEAD

Robert W. Kinkle, Wayne, Pa., assignor to The Budd Company, Troy, Mich.

Filed Aug. 13, 1981, Ser. No. 292,630

Int. Cl.³ B60P *7/14;* **B61D** *45/00;* **B63B** *25/24*

U.S. Cl. 410—121 **13 Claims**



1. An extendible and contractible bulkhead for attachment to a floor of a trailer including a front wall connected thereto comprising:

(a) a main frame adapted to receive load forces from a load on the floor of said trailer,

(b) a plurality of spaced arms pivotally connected to said main frame at one set of ends and to the floor of said trailer at the other set of ends to receive the forces developed in said main frame and transmit them to the floor and front wall of said trailer;

(c) said one set of ends of said arms being disposed to move vertically on said main frame when said bulkhead is extended and contracted;

(d) stabilizing means secured between said main frame and said plurality of arms to maintain said main frame vertically when said bulkhead is extended or contracted;

(e) said stabilizing means comprising a horizontal bar extending through said arms intermediate the ends of said main frame;

(f) a pair of stabilizing arms spaced from opposite sides of said plurality of arms and connected between opposite ends of said horizontal bar and bottom portions of said main frame;

(g) locking receptacles provided in the floor of said trailers;

(h) locking mechanisms including movable lock elements secured to said main frame; and

(i) said lock elements being disposed to move into said receptacles to lock said main frame at a predetermined position and removed from said receptacles to permit said main frame to be moved toward said front wall of said trailer.

4,498,825

LOAD INDICATING FLANGE

Walter R. Pamer; James A. Zils, both of Parma, and Terry D. Capuano, Hinckley, all of Ohio, assignors to Russell, Burdsall & Ward Corporation, Cleveland, Ohio

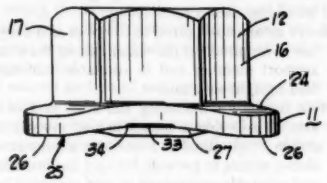
Filed Sep. 27, 1982, Ser. No. 423,861

Int. Cl.³ F16B *39/28, 31/02*

U.S. Cl. 411—11 **21 Claims**

1. A load indicating annular flange for cooperation with first and second interengaging fasteners, such flange providing a seating surface and resilient portions, said resilient portions operating to engage an associated workpiece before said seating surfaces engage such workpiece, and when said fasteners are tightened to cause engagement of said seating surface with such workpiece, said resilient portions applying a predetermined force to such a workpiece, said flange also providing a peripheral gauging surface, said gauging surface moving to a predetermined minimum spacing from such workpiece when

said seating surface is seated thereagainst and being spaced from such workpiece by a distance greater than said predetermined minimum spacing when said seating surface is not seated, whereby a gauge having a thickness slightly greater than said predetermined minimum spacing can be inserted



between said gauging surface and said workpiece until such seating surface is seated thereagainst, said predetermined minimum spacing being sufficiently great to render a gauge therefor thick enough to be durable, said gauging surface having a width greater than the thickness dimension parallel to the axis of the fasteners to render a gauge wide enough to be durable.

4,498,826

SELF LOCKING NUT INCLUDING AN AXIALLY EXTENDING REINFORCEMENT

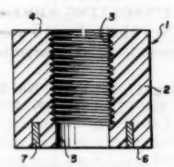
Oliver E. Simmonds, Old Orchard, Checkendon, Near Reading, Berkshire, England

Continuation of Ser. No. 255,942, Apr. 20, 1981, abandoned. This application Dec. 1, 1983, Ser. No. 564,761

Claims priority, application United Kingdom, Apr. 30, 1980, 8014246

Int. Cl.³ F16B *39/00*

U.S. Cl. 411—301 **3 Claims**



1. A self-locking nut made of a plastic material, said nut including a nut body including a coaxially aligned bore extending through said nut body and open to each axial end of said nut body, said axially aligned bore having a first bore portion extending from one axial end and terminating at a second bore portion which extends from the termination of said first bore portion to an axial end of said nut body, said first bore portion having a length and diameter which is greater than a length and diameter of said second bore portion of said axially aligned bore, said first bore portion having threads thereon extending inwardly from one axial end and terminating at said second bore portion and adapted to receive a threaded shank end of a cooperating bolt having the same thread as said threaded first bore portion, said second bore portion adapted to receive said threaded shank end of said bolt with said bolt forming its own threads within said second bore portion of said axially aligned bore thereby locking said nut body onto said bolt, a cylindrical reinforcement embedded within said nut body radially opposite said second bore portion, said reinforcement having a greater diameter than said threaded first bore portion, a length which is substantially the same as that of said second bore portion and a tensile strength which is greater than that of said nut body thereby forming a reinforcement for said non-threaded second bore portion of said axial bore during threading of a shank end of a bolt into said second bore portion of said axially aligned bore.

4,498,827

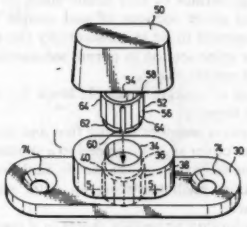
FASTENING DEVICE

Bernard Mair, 65 McMorran Crescent, Thornhill, Ontario, Canada L4J 2T4

Filed Jun. 2, 1983, Ser. No. 500,341

Int. Cl.³ A44B *1/32*; F16B *21/08*

U.S. Cl. 411—349 **14 Claims**



1. A fastening device comprising:

a base portion and a key portion;

one said portion including a post member, the other a wall member defining an axially extending bore opening therein mounting said post member for rotation about its axis;

said members being provided on the axial wall surfaces thereof with cooperating elements so that as said portions are relatively rotated a radially compressive force is periodically generated between said elements, and

means retaining said post member within said socket opening.

4,498,828

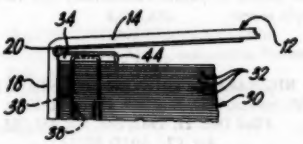
SAMPLE BOOK AND METHOD OF MAKING SAME

Don Ackerman, Scotch Plains, N.J., assignor to Economy Color Card Co., Inc., Roselle, N.J.

Continuation of Ser. No. 318,203, Nov. 4, 1981, abandoned. This application Oct. 21, 1983, Ser. No. 543,791

Int. Cl.³ B42D *1/00, 1/04, 3/00*

U.S. Cl. 412—4 **37 Claims**



1. A sample book for sample sheets comprising:

a cover member including first and second substantially planar cover sections joined by a substantially planar sturdy spine section, said first and second cover sections each being connected to said spine section by hinge means and each including an inner surface and an outer surface;

a plurality of individual sample sheets arranged in a stack;

sheet securing means disposed adjacent to one edge of said stack of sample sheets securing said plurality of individual sample sheets together to form a bound stack of sample sheets having a substantially planar edge surface defined by the edges of said sample sheets;

a pair of covering sheets for the outer surfaces of said bound stack, each of said covering sheets including a first portion and a second portion separated by a fold line, said first portions of said covering sheets each being secured to said

bound stack so that said fold line thereof is in alignment with the plane of said planar edge surface of said bound stack;

edge securing means for adhesively securing only said planar edge surface of said bound stack of sample sheets to said planar spine section of said cover member so that they are connected together in abutting planar relationship; and

means for adhesively securing only said second portions of said covering sheets to said inner surfaces of said first and second cover sections, respectively, whereby said hinge means are substantially in alignment with the plane of said planar edge surface of said bound stack so that said first and second cover sections of said sample book may be hingedly opened to lie in substantially the same plane as said planar spine section to permit substantially full viewing of said sample sheets.

24. A method of making a sample book for sample sheets comprising the steps of:

providing a cover member having first and second substantially planar cover sections joined to a substantially planar sturdy spine section by hinge means, said first and second cover sections each including an outer surface and an inner surface;

providing a plurality of sample sheets in a stack;

binding said plurality of sample sheets together with sheet securing means disposed adjacent to one edge of said stack of sample sheets to form a bound stack of sample sheets having a substantially planar edge surface defined by the edges of said sample sheets;

providing a pair of covering sheets for the outer surfaces of said bound stack of sample sheets, said covering sheets each including a first portion and a second portion separated by a fold line;

securing said first portions of said covering sheets to said bound stack of sample sheets so that said fold lines thereof are in alignment with the plane of said planar edge surface of said bound stack of sample sheets;

adhesively securing only said planar edge surface of said bound stack of sample sheets to said planar spine section of said cover member so that they are connected together in abutting planar relationship; and

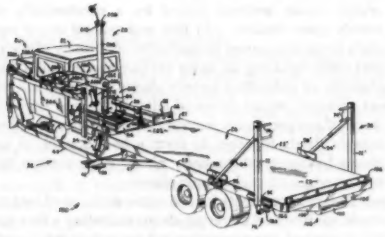
adhesively securing only said second portions of said covering sheets to said inner surfaces of said first and second cover sections, respectively, whereby said hinge means of said cover member are substantially in alignment with the plane of said planar edge surface of said bound stack so that said first and second cover sections may be hingedly opened to lie in substantially the same plane as said planar spine section to permit substantially full viewing of said sample sheets.

4,498,829

BIG BALE RETRIEVER AND STACKER

Warren W. Spikes, P.O. Box 759, Hugoton, Kans. 67951

Filed Dec. 21, 1982, Ser. No. 451,785
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.5 **27 Claims**



1. A bale loader comprising:

a bale receiving platform;

an upstanding support member adjacent said platform;

a hoist arm having spaced-apart inner and outer ends;

means for mounting said hoist arm to said support member in longitudinal movement along the extent thereof and in pivotal movement about a generally horizontal axis and in rotatable movement about an upright axis;

said mounting means comprising:

sleeve means configured to fit about said support member in longitudinal movement along the extent of said support member and in rotatable movement about said upright axis; and

pivot means for mounting the inner end of said hoist arm to said sleeve means in said pivotal movement and in longitudinal and rotatable movement with said sleeve means to provide for said longitudinal, pivotal and rotatable movement of said mounted hoist arm;

grapple means operably mounted to said outer end of said arm member for releasably seizing a hay bale;

means for controlling said pivotal movement of said arm member to move said grapple means through a generally vertically disposed arc relative to said platform;

means for controlling said rotatable movement of said sleeve means to move said arm member and grapple means through a generally horizontally disposed arc relative to said platform; and

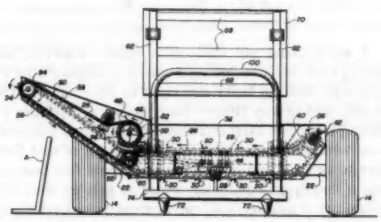
means for controlling said longitudinal movement of said sleeve means to move said arm member and grapple means between at least first and second vertically disposed stages of said controlled pivotal and rotatable movement to establish a multistage hoist having a first stage for picking up a first ground-adjacent hay bale and loading the same onto said platform and at least one subsequent stage for picking up a second ground-adjacent hay bale and stacking the same on said first hay bale previously loaded on said platform.

4,498,830

BALE UNROLLING APPARATUS

Shaun A. Seymour, New Holland, and James G. Greiner, Leola, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 17, 1983, Ser. No. 523,996
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.6 **3 Claims**



1. An apparatus for unrolling roll bales of crop material, said apparatus comprising:

(a) a frame;

(b) an apron movably supported on said frame having upper and lower runs extending through a first section extending substantially horizontally, a second section disposed at one end of said first section and being inclined upwardly from said one end of said first section, and a third section disposed at the other end of said first section and being inclined upwardly from said other end of said first section, said apron including a pair of endless chains connected together at spaced intervals by transverse members;

(c) a finger drum rotatably supported on said frame and located near the intersection of said first and second sec-

tions of said apron, said finger drum including a cylinder and a plurality of fingers which reciprocate into and out of said cylinder as said cylinder rotates, said finger drum being located close enough to said apron so that said transverse members of said apron strip material from said finger drum during rotation thereof;

(d) said apron being movable in a direction to move a roll bale resting thereon into contact with said finger drum so that material will be removed from said roll bale and delivered over said cylinder onto said second section of said apron; and

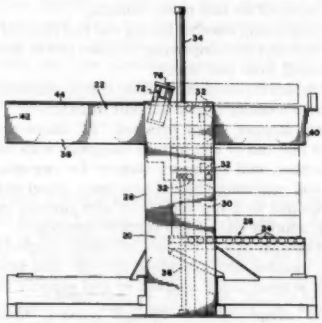
(e) said second section of said apron carrying said material upwardly to a height suitable for delivery into a feed trough while said third section of said apron prevents the remaining portion of said roll bale from rolling off said apron.

4,498,831

ARTICLE STACKING APPARATUS

Thomas R. Salts, Roanoke, Ill., assignor to Besser Industries, Inc., Roanoke, Ill.

Filed Apr. 27, 1983, Ser. No. 489,227
Int. Cl.³ B65G 57/10
U.S. Cl. 414—46 **12 Claims**



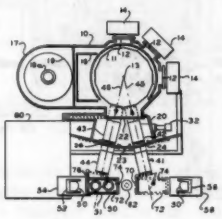
10. In an apparatus for stacking successive layers of articles into a multilayer stack including a fixed frame, a horizontally elongate elevator, first drive means for driving said elevator in vertical movement on said fixed frame from and to a lowered position, a horizontally disposed planar transfer plate mounted on said elevator for forward and rearward movement longitudinally upon said elevator between a retracted position at the rearward end of said elevator and an extended position at the forward end of said elevator, second drive means for driving said plate in a path of movement between said retracted and extended positions, a stripper member mounted on said elevator operable in a projected position to strip a layer of articles from said plate upon rearward movement of said plate from said extended position to said retracted position and operable in an inactive position to accommodate unobstructed movement of a layer of articles carried on said plate, third drive means for moving said stripper member between said projected position and said inactive position, and a stacking table on said frame having a stacking surface adapted to support a stack of articles located at substantially the level of said plate when said elevator is at its lowered position, the improvement wherein said stacking surface is located to underlie a front portion of said elevator and to underlie said plate when said plate is in its extended position; said stripper member is generally longitudinally intermediate said elevator and disposed below the path of movement of said plate when in inactive position, but is raised slightly above the path of movement of said plate when said stripper member is moved to a projected position, and wherein said plate is of a length less than half of the elevator and the plate's longitudinal path of movement such that when in forward position the rear edge of the plate is forward of the projected position of said stripper member.

4,498,832

WORKPIECE ACCUMULATING AND TRANSPORTING APPARATUS

Richard E. Corville, Alameda, Calif., assignor to The BOC Group, Inc., Montvale, N.J.

Filed May 21, 1982, Ser. No. 380,852
Int. Cl.³ C23C 15/00
U.S. Cl. 414—217 **9 Claims**



1. An apparatus for vacuum processing of workpieces, comprising:

a sealable chamber;

a receiver for receiving and simultaneously supporting a plurality of workpieces inside the chamber;

a lock adjacent the chamber;

a first gate between the lock and the chamber having an opening through which workpieces can pass;

means for evacuating the chamber and the lock;

a first walking beam accumulator;

means for moving the first accumulator between a first position in which the first accumulator is entirely inside the lock, and a second position in which workpieces can be transferred between the first accumulator and the receiver via the first gate opening; and

means for operating the first walking beam accumulator to transfer a plurality of workpieces between the first accumulator and the receiver.

4,498,833

WAFER ORIENTATION SYSTEM

Richard J. Hertel, Bradford, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

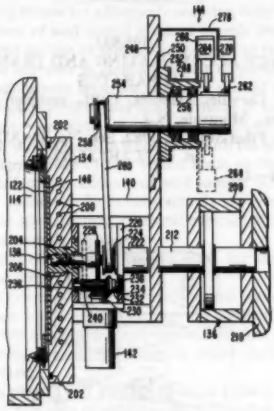
Filed May 24, 1982, Ser. No. 381,286
Int. Cl.³ B65H 1/00
U.S. Cl. 414—217 **16 Claims**

1. Apparatus for positioning a generally circular wafer in a wafer processing chamber, said apparatus comprising:

wafer handling means associated with an entrance to said wafer processing chamber for receiving said wafer and moving said wafer into said processing chamber, including a processing chamber door movable between an open position in which said wafer is received and a sealed position in which said wafer is sealed into said wafer processing chamber and means for moving said chamber door between said open position and said sealed position;

means associated with said wafer handling means for engaging said wafer and rotating same through a programmable, preselected angular displacement about an axis generally perpendicular to said wafer and centrally located thereon, including a rotatable vacuum chuck extending from the inside surface of said chamber door for receiving said wafer when said chamber door is in said open position and

means for rotating said vacuum chuck and said wafer through said preselected angular displacement; and



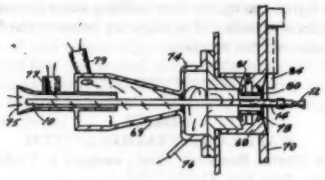
means for delivering said wafer to said wafer handling means, whereby the orientation of said wafer about said axis during processing is controlled.

4,498,834

VALVE FOR FUEL PIN LOADING SYSTEM

David W. Christiansen, Kennewick, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 30, 1982, Ser. No. 445,606
Int. Cl.³ G21C *21/00*; E06B *7/00*
U.S. Cl. 414—291 4 Claims



1. A valve for facilitating axial entry and exit of the open end of a fuel pin subassembly through a supporting apertured wall of an enclosure, comprising:

a valve base adapted to be sealed within an aperture in the wall, said valve base including an inflatable seal movable between an open condition capable of permitting passage of the open end of a fuel pin subassembly and a closed condition in which the periphery of a fuel pin is engaged about its circumference;

chamber means extending outward from the valve base in approximately coaxial open communication with the inflatable seal; the chamber means including an enclosed hood extending outward from the valve base;

gas inlet means spaced from said valve base for directing a stream of pressurized gas tangentially into the enclosed hood and toward the valve base to form a spiraling flow of gas about a fuel pin positioned therein; and

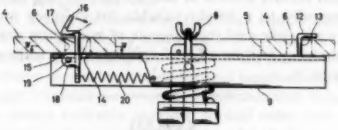
gas outlet means adjacent the valve base for exhausting gas flowing through the chamber means.

4,498,835

STOPPING DEVICE IN SPARE WHEEL HOLDING APPARATUS

Setsuo Yasue, Gifu, and Tomio Yamamoto, Aichi, both of Japan, assignors to Sanko Kiki Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 203,853, Nov. 4, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 470,719
Claims priority, application Japan, Nov. 12, 1979, 54-146280
Int. Cl.³ B62D *43/04*
U.S. Cl. 414—463 2 Claims



1. An apparatus for holding a spare wheel for a motor vehicle wherein the spare wheel includes a wheel disk with wheel mounting holes therethrough, said apparatus comprising

an elongated spare wheel support member having a "⌐¬" shaped cross-section;

a winch provided on said motor vehicle;

a flexible suspending member having one end coupled to said winch such that said suspending member can be wound up or unwound from said winch;

a resilient means for coupling another end of said suspending member to a center of said support member;

a stationary stopper of an inverted "L" shape provided adjacent one end of and formed integrally with said support member, said stationary stopper for engaging with one of said mounting holes in said spare wheel disk;

a hole provided in a top surface of said support member adjacent another end of said support member;

a movable stopper of a "⌐\" shape pivotally coupled to said support member and extending through said hole, said movable stopper being coupled to said support member such that a "<" shaped portion of said "⌐\" shape extends away from said center of said support member and such that said movable stopper is pivotable towards said center of said support, said movable stopper being engageable with another mounting hole in said wheel disk; and

a tension spring coupled between an end of said movable stopper and a side of said support member for biasing said movable stopper in a direction away from said center of said support member;

whereby said spare wheel is mounted on said support member by first passing said supporting member through a central hole in said wheel disk, then engaging said one mounting hole with said stationary stopper and then pressing said wheel disk against said movable stopper to cause said movable stopper to pivot towards said center of said support member, to fit through said another mounting hole and return to hold said wheel disk securely such that said wheel and support can be wound up by said winch.

4,498,836

LOADING RAMP FOR TRUCK BED

Richard R. Love, Box 468, Buhl, Id. 83316

Filed Sep. 17, 1982, Ser. No. 419,576
Int. Cl.³ B60P *1/26*
U.S. Cl. 414—537 10 Claims

1. An equipment carrying truck or trailer in combination with a ramp or runway for loading and unloading such equipment comprising:

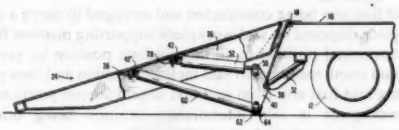
a longitudinally extending ramp hingedly connected to the rear of the truck for movement between a raised, level position and a downwardly inclined, ground engaging position;

a pair of brace members secured to the rear of said truck and depending therefrom in spaced parallel relation;

a pair of plate members arranged in spaced parallel relation to one another and connected to said brace members by a pivot pin;

a power cylinder and piston with one end of the cylinder pivotally connected to the central portion of said ramp;

an elongated tube having one end pivotally connected to the central portion of said ramp and arranged in longitudinally spaced relation to said power cylinder and piston;



said piston of said power cylinder and piston pivotally connected to one end of said plate members;

the other end of said tube pivotally connected to the other end of said plate members;

said pivot pin being positioned intermediate the ends of said plate members with said plate members being moved about said pivot pin by said power cylinder for moving said power cylinder and piston into parallel relationship with said tube contemporaneous with moving said ramp about its hinged connection to the rear of the truck to its raised, level position.

4,498,837

FORK LIFTER COMPRISING A SLIDABLE FORK

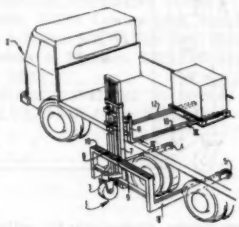
Hessel Kooi, TA Stiens, and Sjoerd Meijer, St. Jacobiparochie, both of Netherlands, assignors to Selectiebedrijf Kooi Beheer B.V., Vrouwenparochie and Machine- en Constructiewerkplaats Meijer, St. Jacobiparochie, both of, Netherlands

Filed Feb. 11, 1981, Ser. No. 233,435

Claims priority, application Netherlands, Feb. 19, 1980, 8001006

Int. Cl.³ B65G *47/00*

U.S. Cl. 414—664 **6 Claims**



1. A fork lifter comprising a mobile frame, a pole arranged on said frame and a load carrier adapted to move up and down along said pole and having a fork protruding from the pole, the fork having prongs provided with extensible parts and each of said prongs having a limited thickness so that the extensible parts likewise are as thin as possible in order to be slid beneath a load, said extensible parts being driven by at least two cylinder-plunger combinations accommodated in each of the prongs of the fork and being located in a substantially horizontal plane, said cylinder-plunger combinations being limited in sectional areas by said limited thickness of the prongs, and means for operating such combinations in unison to extend and retract said extensible parts.

4,498,838

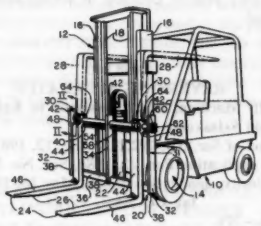
RETENTION DEVICE FOR A LOAD ENGAGING MEMBER

Richard J. Johannson, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

Filed Apr. 4, 1983, Ser. No. 481,601

Int. Cl.³ B66F *9/14*

U.S. Cl. 414—664 **16 Claims**



1. A retention device (30) for a load engaging member (24), said load engaging member (24) having a load carrying position (26) and a transport position (28) and being pivotally movable therebetween; comprising:

a flange (40) positioned at a location adjacent the load engaging member (24);

a stop (66) connected to the load engaging member (24) and engageable with the flange (40) at the transport position (28) of said load engaging member (24), said stop (66) and flange (40) supporting the load engaging member (24) at the transport position (28) and preventing pivotal movement thereof in a direction past said transport position (28) and away from load carrying position (26); and

means (74) for engaging said stop (66) and preventing pivotal movement of said load engaging member (24) from said transport position (24) to said load carrying position (26).

4,498,839

TRACTOR FRONT LOADERS

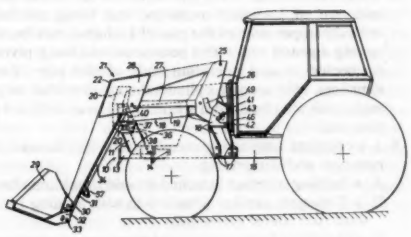
Frederick Williams, Warrington, and Anthony D. Coe, Manchester, both of England, assignors to David Brown Tractors Ltd., Huddersfield, England

Filed Jun. 7, 1983, Ser. No. 502,051

Claims priority, application United Kingdom, Jun. 17, 1982, 8217601

Int. Cl.³ B66C *23/00*

U.S. Cl. 414—686 **9 Claims**



1. A front loader designed for drive-in attachment to a tractor, comprising front and rear bracket means adapted to be permanently secured to the tractor frame, a sub-frame adapted to be temporarily secured to the bracket means, a loader boom assembly pivotably mounted on the sub-frame, a loader bucket or the like pivotably mounted on the boom assembly, and hydraulic piston-and-cylinder assemblies for selectively pivot-

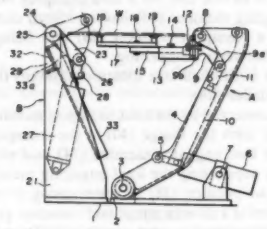
ing the boom assembly and the bucket, wherein the sub-frame locates on the front bracket means and is secured to the rear bracket means by respective easy-release pins each of which passes with substantial radial clearance through aligned axially-spaced holes in one rear bracket and fits, between said holes, in an eccentric bush which fits in a boss fixed to the sub-frame and is rotateable into an operative position in which the pin establishes contact with one side of said holes and the boss establishes contact with a cam-plate fixed to the rear bracket, or into an easy release position in which said contacts are disestablished.

4,498,840

REVERSING APPARATUS

Masaru Orii, Machida, Japan, assignor to Kabushiki Kaisha Orii Judoki Seisakusho, Japan

Continuation of Ser. No. 292,215, Aug. 12, 1981, abandoned. This application Feb. 22, 1984, Ser. No. 581,214
Claims priority, application Japan, May 15, 1981, 56-72220
Int. Cl.³ B65G *47/24*
U.S. Cl. 414—759 **1 Claim**



1. A reversing apparatus for turning a workpiece upside down including:

a. a base;

b. a first arm comprising:

1. a pair of L-shaped members each having a lower end pivotably connected to said base, and an upper end;
2. a first cylinder attached to said base, with a piston rod, an end of the piston rod being pivotably connected to said lower ends of said pair of L-shaped members and capable of pivoting said first arm from a first to a second position with respect to said base;
3. a pair of crank members being pivotably connected by connecting means to the upper ends of said pair of L-shaped members each having an operating end extending past said connecting means;
4. a second cylinder being connected to the lower ends of said pair of L-shaped members, and being coextensive with the upper ends of the pair of L-shaped members, and having a piston rod with a piston rod end being pivotably connected to said operating ends of said pair of crank members, said second cylinder being provided to pivot said crank members from a horizontal to an inclined position; and
5. a workpiece supporting member attached to said crank members and comprising:
   A. a holding member attached to said crank members;
   B. a T-shaped member attached to said holding member with two lateral extensions;
   C. a plurality of vacuum support members attached to said lateral extensions; and
   D. a plurality of bowl-shaped cups attached to said vacuum support members and adapted to hold a work piece when vacuum is applied to said cups; and

c. a second arm comprising:

(1) a first and second frame fixed upright to said base adjacent to said first arm, each having a lower frame end and an upper frame end;

(2) a pivoting member connected to the upper frame end of said first frame;

(3) a work-piece support member extending between said frames and being affixed to said pivoting member at one side and being pivotably affixed at another side to the second frame; and

(4) a third cylinder being connected to the lower frame end and having a piston rod with an end connected to said pivoting member and provided to pivot said work-piece support member between an inclined and a horizontal position;

said first arm being constructed and arranged to move a workpiece disposed on said workpiece supporting member from a horizontal position to an intermediate position by pivoting said crank members to said inclined position and then pivoting said first arm from said first to said second position, said workpiece in said intermediate position being oriented passed its vertical dead center; and

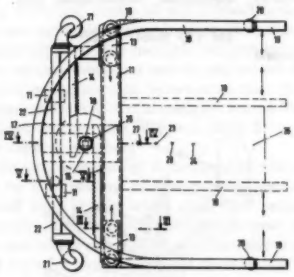
said second arm being constructed and arranged to receive said workpiece from said first arm when said first arm is in said intermediate position.

4,498,841

TURNOVER DEVICE

Claes G. Wickström, Halmstad, Sweden, assignor to Riensch & Held (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 458,806
Int. Cl.³ B65G *7/02*
U.S. Cl. 414—778 **9 Claims**



1. A turnover device, particularly for pallets, which has a frame structure with U-shaped runners and a mechanism having loading forks receiving the pallets, wherein the runners are so arranged with respect to the loading forks of the mechanism for receiving the pallets that the centre of curvature of the runners is located in the vicinity of the overall centre of gravity, including the pallets, and the free ends of the runners are provided with roller means, and at least one caster means is provided, which is positioned in the vicinity of the curvature area of the U-shaped runners, said caster means being movable between a position within the region of the runners and a position outside this region, said roller means and caster means being operable to support the device for horizontal movement to enable the loading forks to move into alignment with a pallet.

4,498,842
APPARATUS FOR ADJUSTING THE TRACK OF ROTOR BLADES THROUGH REMOTE CONTROL

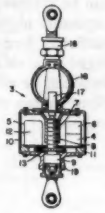
Willy G. Fischer, Ahnatal, and Elmar Thom, Warburg, both of Fed. Rep. of Germany, assignors to Henschel Flugzeug-Werke AG, Kassel, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,319

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 3225571

Int. Cl.³ B64C *11/44, 27/68*

U.S. Cl. 416—155 **2 Claims**



1. An apparatus for adjusting the track of rotor blades through remote control, said apparatus comprising:

a respective two-part, lengthwise adjustable control rod associated with each rotor blade;

a control device, in the form of a potentiometer, and a measuring device installed in said control rod and operatively connected with an operating station which is provided with an indicator;

a supply unit for control of said rotor blade;

a servomotor associated with said unit and with said control rod; said unit including a receiving/transmitting part, and a source of energy for said servomotor, with said receiving/transmitting part and said source of energy being integrated into said control rod and being combined with said servomotor to form a structural unit; and

a housing for accommodating said structural unit formed by said source of energy, said servomotor, and said receiving/transmitting part.

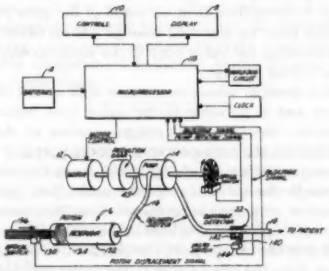
4,498,843
INSULIN INFUSION PUMP

Philip H. Schneider, 2939A Cowley Way, San Diego, Calif. 92117; William J. Weber, 520 W. Ellis Ave., Inglewood, Calif. 90302, and Thomas A. Massaro, 1339 Hill Top Rd., Charlottesville, Va. 22903

Filed Aug. 2, 1982, Ser. No. 404,645

Int. Cl.³ F04B *49/06*; B67D *5/48*

U.S. Cl. 417—22 **12 Claims**



1. A microprocessor controlled peristaltic pump comprising:

a pump having a rotatable pump rotor, and a pump switch means coupled to the pump rotor which alternately opens and closes as the pump rotor rotates;

a motor coupled to and driving the pump rotor;

a reservoir having a cylinder, and a piston which moves into the cylinder as the reservoir is depleted;

a delivery tube connecting the reservoir to the pump, running through the pump, over the rotor, and thence to a delivery site;

a reservoir switch means coupled to the piston which alternately opens and closes as the reservoir is depleted; and

a microprocessor electrically connected to the pump switch means, the reservoir switch means, and the motor such that the microprocessor programmably controls the number of revolutions the pump rotor makes per unit of time in response to signals received from the pump switch and the reservoir switch.

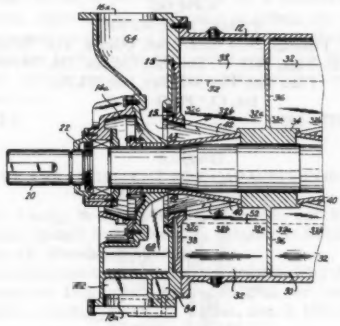
4,498,844
LIQUID RING PUMP WITH CONICAL OR CYLINDRICAL PORT MEMBER

Douglas E. Bissell, Fairfield, and Charles M. Jozepaitis, Bridgeport, both of Conn., assignors to The Nash Engineering Company, Norwalk, Conn.

Filed Aug. 8, 1983, Ser. No. 521,449

Int. Cl.³ F04C *19/00*

U.S. Cl. 417—68 **5 Claims**



1. A liquid ring pump comprising:

a longitudinal annular housing;

a rotatable shaft having a longitudinal axis parallel to the longitudinal axis of the housing, the shaft being eccentrically mounted in the housing;

a rotor fixedly mounted on the shaft and including (1) a plurality of blades extending radially outward from the shaft in planes substantially parallel to the longitudinal axis of the shaft, each blade having first, second, and third portions which are spaced from one another along the length of the shaft, each blade being connected to the shaft adjacent the first portion and being radially spaced from the shaft adjacent the second and third portions, and (2) a planar toroidal shroud member disposed around and radially spaced from the shaft, the toroidal shroud member connecting the third portions of all of the blades, the surface of the second portion of each blade which is radially opposite and faces toward the shaft being defined as the inner surface of the blade;

an annular port member disposed around the shaft and extending into the annular space between the shaft and the second and third portions of the blades, the port member having an annular port surface which is immediately adjacent the inner surfaces of the blades and which faces radially away from the shaft, the port surface having first, second, and third orifices adjacent the second portions of the blades, the first orifice being an intake port for admitting gas to the rotor in an intake zone of the pump, the

second orifice being a discharge port for receiving gas discharged from the rotor in a compression zone of the pump, and the third orifice being a vent-recirculation port located after the intake port but before the discharge port in the direction of rotor rotation; and

a head member connected to the port member remote from the rotor and defining (1) a pump intake conduit for admitting gas to be pumped, (2) a pump discharge conduit for discharging gas pumped by the pump, and (3) a sump chamber for normally retaining a quantity of pumping liquid in the head member, the intake and discharge conduits and the sump chamber being axially spaced from the shroud member on the side of the shroud member remote from the blades;

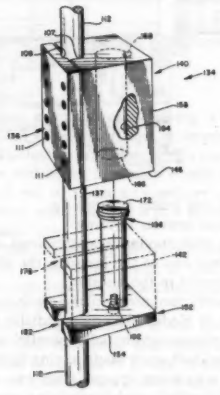
the port member and the head member further jointly defining (1) a first conduit connecting the pump intake conduit and the intake port, (2) a second conduit connecting the discharge port and the pump discharge conduit, the second conduit communicating with the sump chamber above the normal level of pumping liquid in the sump chamber and (3) a third conduit connecting the vent-recirculation port and a location in the sump chamber below the normal level of pumping liquid in the sump chamber, all of the first, second, and third conduits separately passing through the annular space between the shaft and the shroud member.

4,498,845

PUMPER BUMPER

Homer F. Pittman, 3414 Clearmont, Odessa, Tex. 79762, and Bobby D. Gage, 1410 W. 22nd St., Odessa, Tex. 79760

Filed Jun. 13, 1983, Ser. No. 503,711
Int. Cl.³ F04B *39/00*
U.S. Cl. 417—545 **6 Claims**



1. In a pumpjack unit having a rod string supported by a polish rod which in turn is supported by a reciprocating mechanism, wherein the rod string extends downhole in a wellbore to a downhole pump having a pump piston reciprocatingly received within a pump barrel, with the downhole pump piston including a traveling valve assembly associated therewith, and the pump barrel having a stationary valve assembly associated therewith; the improvement comprising:

a jack means by which the rod string can be supported by the reciprocating mechanism; said jack means has a main body within which there is formed a cylinder, a piston reciprocatingly received within said cylinder and forming a variable chamber on one side of said piston; flow passageway means by which fluid flows into and out of said variable chamber to cause the piston to move respective to the main body;

said main body includes an elongated trough which outwardly opens and receives the polish rod therein; a plate member having a confronting surface affixed to said main body to capture the polish rod therebetween and thereby forms a polish rod clamp; a jack base plate affixed to the free end of the piston and supported by structure which reciprocates said rod string; wherein actuation of said jack means moves said polish rod clamp means and said base plate apart; and shim means removably received between said main body and said base plate for changing the relative position of the pump piston respective to the pump barrel;

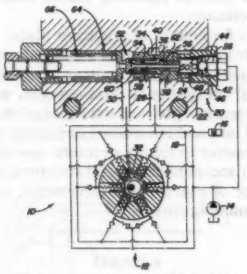
so that the jack means can be actuated into a first position until the pump piston structure impacts against the pump barrel structure with sufficient force to dislodge any debris which may be lodged in a valve of the pump, and thereafter the jack means can be actuated into a second position, so that the pump piston reciprocates and produces fluid from the wellbore.

4,498,846

STROKE CONTROL VALVE

Max P. Gassman, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 20, 1983, Ser. No. 505,676
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—214 **8 Claims**



1. A stroke control valve for controlling communication of stroke control fluid pressure to a stroke control chamber of a main reciprocating piston pump which receives charge fluid from a charge pump, the stroke control valve comprising:

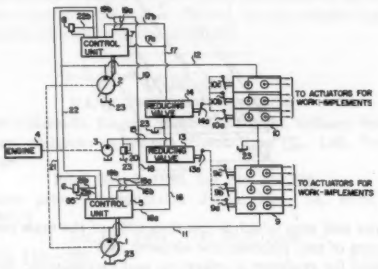
a housing defining a valve bore therein, a charge port communicating an end of the valve bore with an outlet of the charge pump via a first passage, a main port communicating working fluid from an outlet of the main pump to the valve bore via a second passage and an outlet port communicating the valve bore to the stroke control chamber via a third passage;

a valve member which cooperates with a wall of the valve bore and is movable in the valve bore between a first position blocking fluid communication of the working fluid from the main port to the outlet port and permitting communication of charge fluid from the charge port through the valve bore to the outlet port and a second position communicating the working fluid from the main port through the valve bore to the outlet port; and a check valve in the charge port, the check valve permitting fluid flow from the charge port to the outlet port via the valve bore when the valve member is in its first position, the check valve blocking fluid flow from the main port to the charge pump when the valve member is in its second position.

4,498,847
CONTROL SYSTEM FOR VARIABLE DISPLACEMENT HYDRAULIC PUMPS

Teruo Akiyama, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 27, 1983, Ser. No. 508,100
Claims priority, application Japan, Jun. 29, 1982, 57-110722; Jun. 29, 1982, 57-096540[U]; Jun. 29, 1982, 57-096541[U]
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—216 **6 Claims**



1. A control system for variable displacement hydraulic pumps comprising:

(a) a fixed displacement hydraulic pump for supplying a control fluid pressure for a hydraulic servo mechanism;

(b) a plurality of reducing valve means operatively interlocked with work implement control valve units disposed on the delivery sides of a plurality of variable displacement hydraulic pumps, said reducing valve means being adapted to convert the delivery pressure of said fixed displacement hydraulic pump into the output pressure of the reducing valve in proportion to respective displacements of said control valve units by the manipulation thereof;

(c) control units for controlling respective flow rate of said variable displacement pumps, each control unit including a servo piston section adapted to selectively receive the delivery pressure of said fixed displacement hydraulic pump on either side thereof to thereby control the delivery pressures of said variable displacement hydraulic pumps, a guide section adapted to control the delivery pressure of said fixed displacement hydraulic pump to selectively direct it on either side of said servo piston section, and an input signal section adapted to receive the delivery pressure of said fixed displacement hydraulic pump, the output pressure of said reducing valve means and respective delivery pressures of said variable displacement hydraulic pumps so as to control said guide section; and

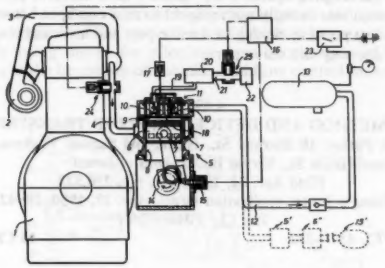
(d) means adapted to exert the delivery pressure of said fixed displacement hydraulic pump, the output pressure of said reducing valve and respective delivery pressures of said variable displacement hydraulic pumps on said control units, respectively.

4,498,848
RECIPROCATING PISTON AIR COMPRESSOR

Ján Petrovsky, Schorndorf, and Heinz Roloff, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,148
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211598
Int. Cl.³ F04B *25/00, 39/08, 39/10, 49/02*
U.S. Cl. 417—253 **5 Claims**

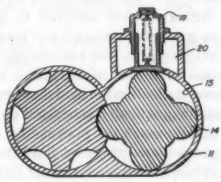
1. Reciprocating piston air compressor with slots in a cylinder wall and a piston driven by a crankshaft for controlling admission of pre-compressed air and with at least one outlet valve for the removal of the compressed air together with a second valve connecting a cylinder space with the external air, wherein the second valve is controlled as a function of an angle of the compressor crankshaft to form a regulating valve which opens during the piston return stroke between the closing of the outlet valve and the opening of the slots and which connects the cylinder space with an additional dead or storage space, which is in turn connected with the external air, and wherein the air is pre-compressed by a turbocharger, and wherein, when the air compressor is idling, the regulating valve is continuously open and respective shut-off valves close the passage between the turbo-compressor and the air compressor and the passage from the additional dead space to the external air.

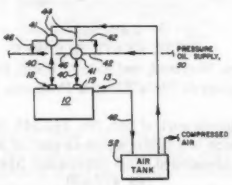


4,498,849
VALVE ARRANGEMENT FOR CAPACITY CONTROL OF SCREW COMPRESSORS

(Lars) Lauritz B. Schibbye, Saltsjö-Dufnäs, and Rolf A. Englund, Spånga, both of Sweden, assignors to Sullair Technology AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 260,056, May 4, 1981, abandoned. This application Sep. 14, 1983, Ser. No. 532,296
Claims priority, application Sweden, Jun. 2, 1980, 8004091
Int. Cl.³ F04C *18/16*
U.S. Cl. 417—299 **9 Claims**





1. In an oil injected screw compressor having a housing with a wall forming two intersecting bores, a pair of meshing rotors in said bores defining a compression space in the housing, and

inlet and discharge ports at the ends of said housing, a capacity control comprising:

a valve port in the housing wall between the inlet and discharge ports and communicating with the compression spaced in one of said bores; and

a valve formed of a valve housing and a cylindric valve piston slidable therein, which piston has a downwardly facing valve disk sealing against the housing wall, said valve being operably associated with said valve port and movable radially with respect to said one bore between a first position closing said valve port and a second position opening said valve port.

4,498,850

METHOD AND DEVICE FOR FLUID TRANSFER

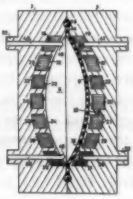
Gena Perlov, 18 Disraeli St., Haifa, and Samuel Tuchman, 15 Hanarkissim St., Kiryat Bialik, both of Israel

Filed Apr. 22, 1981, Ser. No. 256,522

Claims priority, application Israel, Apr. 28, 1980, 59942

Int. Cl.³ F04B *43/14*

U.S. Cl. 417—322 **15 Claims**



1. A device for fluid transfer comprising:

a housing-like body with at least one wall having at least one concavity;

at least one elastically flexible magnetically activatable diaphragm consisting of an elastomer base to which is admixed permanent magnetic substances, said diaphragm being capable of forming, in conjunction with said concavity, one or more pocket-like chambers;

at least one inlet aperture and at least one outlet aperture located at opposite points along the periphery of said concavity; a plurality of electromagnets arranged in proximity to said concavity and adapted to generate, in a predeterminable sequence, a plurality of magnetic fields of controllably changing polarities and intensities producing, by a combination of forces of attraction and repulsion, cycles of dynamic deflections of said diaphragm, whereby by means of said magnetically generated dynamic deflections of said diaphragm, said pocket-like chambers are peristaltically manipulated to move fluid from the region of said inlet aperture through which said fluid is drawn in, towards the region of said outlet aperture, through which said fluid is expelled.

4,498,851

SOLID STATE BLOWER

Henry H. Kolm, Wayland, and Eric A. Kolm, Brookline, both of Mass., assignors to Piezo Electric Products, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 142,348, May 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 036,812, May 7, 1979, abandoned. This application Mar. 22, 1983, Ser. No. 477,630

Int. Cl.³ F04B *35/04*

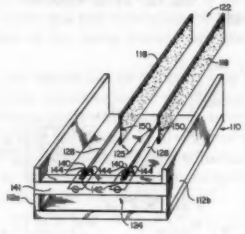
U.S. Cl. 417—322 **1 Claim**

1. A pumping device comprising:

a housing;

a piezoelectric element having one end mounted to said housing and one end free;

a generally planar impeller blade connected to the free end of said piezoelectric element and having its distal end unconstrained by said housing; said blade having a Q-factor of at least eight, a stiffness-to-density ratio of more than one million newton-meters per kilogram and a mass



per unit area which is less than 60% of the mass per unit area of said piezoelectric element; and

means for applying a voltage to said piezoelectric element for oscillating its free end perpendicular to its plane at or close to resonance and propagating a traveling quadrature wave along said blade to generate and shed vortices at the distal end of said blade.

4,498,852

SCROLL TYPE FLUID DISPLACEMENT APPARATUS WITH IMPROVED END PLATE FLUID PASSAGE MEANS

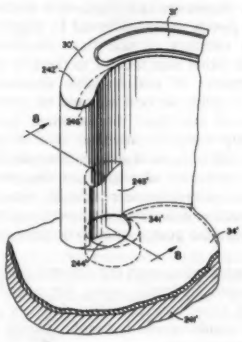
Masaharu Hiraga, Honjo, Japan, assignor to Sanden Corporation, Japan

Filed Mar. 9, 1982, Ser. No. 356,497

Claims priority, application Japan, Mar. 9, 1981, 56-33645

Int. Cl.³ F01C *1/02, 19/08*

U.S. Cl. 418—55 **18 Claims**



1. In a scroll type fluid displacement apparatus including first and second scroll members having, respectively, first and second end plates and first and second spiral wraps extending from one side surface of said first and second end plates, said spiral wraps interfitting at an angular and radial offset to make a plurality of line contacts between their spiral curved surfaces and axial contacts between the axial end surfaces of said spiral wraps and the opposed end plates thereby to define a plurality of fluid pockets, driving means operatively connected to at least one of said scroll members to effect relative orbital motion of said scroll members while preventing relative rotation thereof thereby to cause said fluid pockets to move and change in volume, fluid passage means through said first end plate

adjacent the inner end portion of said first spiral wrap, and an axial seal element on the axial end surface of said second spiral wrap in sliding, sealing relationship with said first end plate, said seal element terminating short of the inner end of said second spiral wrap so as not to contact said fluid passage means, the improvement wherein said fluid passage means has a generally elongated cross-section with the longer dimension thereof extending generally parallel to the adjacent portion of said first spiral wrap, said seal element terminating closer to the inner end of said second spiral wrap than it would for a fluid passage means having a less elongated cross-section, whereby a more complete axial seal is effected, thereby improving the volumetric efficiency of the apparatus.

4,498,853

VANE-TYPE COMPRESSOR

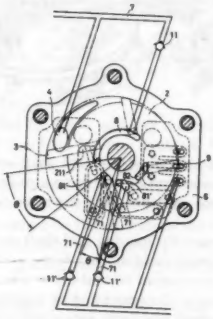
Hiroshi Sakamaki, Tochigi, and Yukio Suzuki, Saitama, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 214,394

Claims priority, application Japan, Dec. 14, 1979, 54-172390[U]

Int. Cl.³ F01C *1/00*; F02C *2/00*

U.S. Cl. 418—268 **5 Claims**



1. A vane-type compressor comprising: a rotor housing; a pair of side housings; a rotor rotatably disposed within a rotor chamber defined between said rotor housing and said pair of side housings; a plurality of vanes slidably disposed within corresponding vane grooves radially formed in said rotor; means for applying intake fluid pressure to spaces defined between each said vane groove and a bottom of the corresponding vane during suction strokes, said pressure being applied through a first arcuate groove, a second arcuate groove being formed in an inner surface of said side housing at a position corresponding to said spaces during compression strokes, a pressure discharge passage connecting said second arcuate groove and an outlet port; and a check valve provided in said pressure discharge passage, wherein said second arcuate groove is subdivided into a plurality of grooves, each of said plurality of grooves being connected to a corresponding one of said pressure discharge passages and check valves.

4,498,854

IN-MOLD LABELER—DUAL PARISON

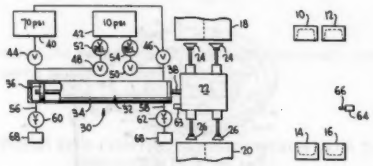
John M. Ross, Des Plaines, Ill., assignor to Continental Packaging Company, Inc., Stamford, Conn.

Filed Oct. 13, 1982, Ser. No. 434,152

Int. Cl.³ B65C *9/00*; F15B *13/04, 15/22*

U.S. Cl. 425—116 **7 Claims**

1. A pneumatic back and forth feed system for a device having a dwell time at each end of its stroke, said feed system comprising a linear pneumatic motor having a fixed cylinder and a piston mounted in said cylinder for reciprocation, said cylinder having at each end thereof a supply port and a separate discharge port, a discharge line connected to each discharge port, said discharge line opening to atmosphere and having therein a restricted flow control member, a supply line connected to each supply port, a high pressure gaseous supply and a low pressure gaseous supply, a control valve separately connecting each of said gaseous supplies to each of said supply lines to selectively supply gas under pressure at one of said pressures to each end of said cylinder, said control valve for said high pressure supply being operable at the beginning of a stroke of said piston to admit high pressure gas to said cylinder at the beginning of a stroke with said high pressure gaseous supply being means for effecting rapid acceleration of said piston at the beginning of a stroke, said flow control members



being operable to exhaust gas from each end of said cylinder at a rate lesser than the rate of gaseous supply into the opposite end of said cylinder from said high pressure source, said flow control members forming means for effecting deceleration of said piston near the end of a stroke, compressible shock absorber means at each end of said stroke, said control valve for said low pressure supply provides low pressure when a respective shock absorber means is compressed, and said low pressure reacting on said piston is sufficient to retain the compressed state of the respective shock absorber means.

4,498,855

APPARATUS FOR THE TREATMENT OF ANIMAL EXCREMENTS AND SEWAGE SLUDGES

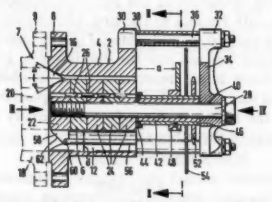
Wolfgang Baader, Bundesallee 50, 3300 Braunschweig, Fed. Rep. of Germany

Division of Ser. No. 533,152, Sep. 16, 1983, , which is a continuation of Ser. No. 346,608, Feb. 8, 1982, abandoned, which is a continuation of Ser. No. 875,088, Feb. 3, 1978, abandoned. This application Nov. 28, 1983, Ser. No. 555,510

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705098

Int. Cl.³ B29C *23/00*; B29F *3/04*

U.S. Cl. 425—308 **9 Claims**



1. In an extrusion press for making briquettes of natural waste material including organic waste substance, the improvement comprising a die having two substantially concentric members defining an array of passages therebetween said passages being disposed about and substantially parallel to the axis of said concentric members, all pairs of adjacent said passages being connected by a slit therebetween and extending along said passage and at a distance from the outlet ends of said

passages a dividing finger being disposed and rotatable about said axis.

4,498,856

COMPACTING MILL

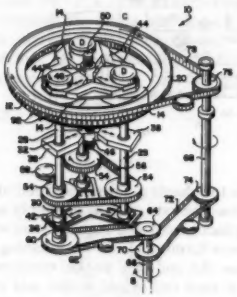
Charles F. Botha, and Adriaanus L. Lambrechts, both of Malmesbury, South Africa, assignors to Ru-Korrel (Propietary) Limited, South Africa

Filed Nov. 3, 1983, Ser. No. 548,507

Claims priority, application South Africa, Nov. 5, 1982, 82/8148

Int. Cl.³ B29F *3/012*

U.S. Cl. 425—331 **6 Claims**



1. A compacting mill for compacting particulate solids into briquettes, pellets, or the like, and comprising: a stationary structure; a cylindrical die plate mounted on said structure, the die plate having an axis of symmetry (the first axis of symmetry) and having die passages extending through the die plate; and at least two circumferentially spaced compacting rollers each having an axis of symmetry (the respective second axis of symmetry), having an outside diameter which is smaller than the inside diameter of the die plate, and being relatively displaceable along the inside of the die plate, thereby to press material to be compacted into the die passages;

wherein the die plate is fast with a first drive transmission member co-axial with the die plate;

wherein the compacting roller is fast with a second drive transmission member co-axial with the roller;

wherein there is a positive drive connection between the die plate and the roller via said first and second drive transmission members;

wherein the rollers are spaced apart circumferentially by more than 90° and are mounted such that each said roller is, during operation of the mill, displaceable radially inwardly with respect to the first axis of symmetry by the pressure exerted by said material on the roller as the material is being pressed into the die passages; and

wherein there is an interconnection between the rollers which is such that radially inward displacement of either one of the rollers is dependent on radially outward displacement of the other roller.

4,498,857

APPARATUS FOR FORMING ADOBE BRICKS AND DRILLING WELLS

Herbert D. Kinnamon, Queen Creek, Ariz., assignor to Loyce O. Burks, Phoenix, Ariz., a part interest

Filed Dec. 1, 1983, Ser. No. 556,983

Int. Cl.³ B28B *5/08*; E02D *7/06*

U.S. Cl. 425—361 **6 Claims**

1. A pressure applying apparatus for forming adobe bricks or driving well casings into the earth comprising:

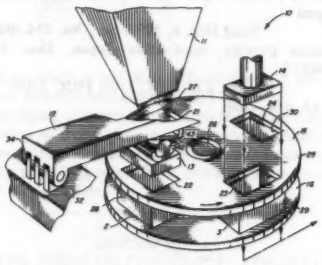
a platform;

a drive arm pivotally mounted at one end on said platform and movable in a predetermined arcuate path,

a hydraulic activated cylinder connected to said drive arm at the other end for pivotally moving said driven arm reciprocally along said arcuate path,

ram means connected to said drive arm at a point between its ends for moving in a relatively vertical direction upon arcuate movement of said drive arm,

said ram means comprising a first shaft, a guiding support connected at one end to said platform and forming a bearing at the other end for said first shaft, a first track angularly positioned on said drive arm relative to the longitudinal axis of said drive arm, a rotative first wheel mounted on one end of said first shaft supported by said first wheel on said first track for limited movement therealong and a pressure plate mounted on the other end of said first shaft,



said ram means activating said first shaft and said pressure plate upon movement of said drive arm in a first direction to remove said pressure plate from an associated mold, and

compression means for moving said shaft and pressure plate into an associated mold and applying a force to said ram means upon movement of said drive arm in a first direction comprising a plate mounted on said drive arm having a surface arranged angularly with respect to the longitudinal axis of said drive arm, a cradle mounted on said pressure plate and a roller bar mounted in said cradle for physical contact with said surface upon predetermined angular movement of said drive arm in said second direction, said drive arm upon movement in said second direction by said ram means causing said surface to engage said roller bar and a relative movement of said surface and said roller bar over each other to maintain a vertical movement of said shaft and pressure plate relative to the angular movement of said drive arm.

4,498,858

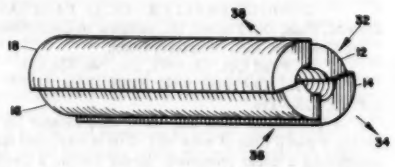
HEATED DIE FOR CARBONIZED MATERIAL

Donald A. Full, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,195

Int. Cl.³ A01J *21/00*

U.S. Cl. 425—466 **6 Claims**



1. A die for forming friable material comprising:

a. an axial elongated, segmented mold defining a passage having inlet and outlet ends; and

b. moving means capable of independently moving opposed segments of said mold perpendicularly of the axis of said mold and also capable of moving each pair of opposed segments of said mold in a direction parallel to the axis of said mold, wherein said moving means operates opposed segments in a synchronous manner.

4,498,859

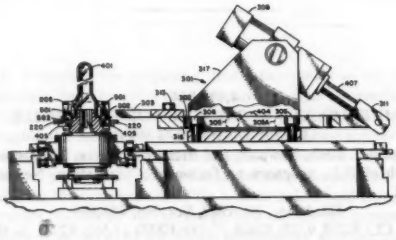
CHUCK ACTIVATING APPARATUS

Joseph F. Gibbemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 11, 1983, Ser. No. 483,886

Int. Cl.³ B29D *23/03*

U.S. Cl. 425—534 **5 Claims**



1. In a machine for blow molding a thermoplastic polymer container, said machine having a chuck for receiving and releasably retaining a thermoplastic polymer preform, the chuck comprising a housing, a gripper assembly attached to the housing for releasably grasping the preform and a release ring slidably mounted on the exterior of the housing for engaging the gripper assembly, an apparatus for activating the chuck to receive and releasably retain the preform comprising

(a) a frame,

(b) a slide having a forked end for engaging the release ring of the chuck movably supported on the frame for horizontal movement between a forward chuck engaging position and a rearward chuck disengaging position,

(c) a means for reversably moving the slide,

(d) limiting means for controlling the travel of the slide in a horizontal direction in the frame,

(e) pivoting means for causing pivoting of the slide at its forward limit of travel and

(f) means for producing substantially vertical movement of the forked end for engaging the release ring.

4,498,860

INJECTION MOLDING APPARATUS HAVING A SPRUE HOLDER WITH AN INCLINED RETRACTABLE RAM

Geoffrey D. Gahan, Great Missenden, England, assignor to Mouldmaking Design Centre Limited, Buckinghamshire, England

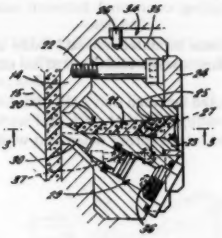
Filed Jul. 28, 1983, Ser. No. 518,277

Claims priority, application United Kingdom, Aug. 6, 1982, 8222794; May 11, 1983, 8312935

Int. Cl.³ B29F *1/03, 1/05;* B29D *27/00*

U.S. Cl. 425—562 **12 Claims**

1. A holder for the sprue of an injection moulding machine, the holder comprising gate means having a passageway through which the material to be moulded is injected into the moulding space and within which a sprue is formed and from which the sprue is ejected during each operating cycle, the passageway having an inlet end and an outlet end open to the mould space, and the gate means including a retractable ram inclined to the passageway, the ram being movable between a withdrawn position and a position in which the ram closes the



outlet end of the passageway, the ram simultaneously cutting off the sprue from the moulding.

4,498,861

METHOD FOR CONTROLLING COMBUSTION IN INDUSTRIAL FURNACES

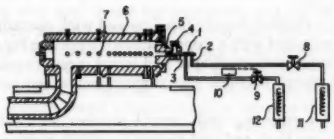
Tomio Suzuki, and Kotaro Morimoto, both of Kobe, Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Aug. 22, 1980, Ser. No. 181,384

Claims priority, application Japan, Apr. 9, 1979, 54-43211; Aug. 22, 1979, 54-107524; Aug. 22, 1979, 54-107525; Nov. 2, 1979, 54-142599; Nov. 2, 1979, 54-142600

Int. Cl.³ F23N *5/08*

U.S. Cl. 431—12 **11 Claims**



1. A method for controlling combustion of an atomized fuel in an industrial furnace in which the atomized fuel is injected into the furnace by a burner, said method comprising the steps of:

(a) establishing the correlation between total flame radiation in the industrial furnace and the feed rate of an atomizing medium per unit quantity of the fuel;

(b) establishing the correlation between the internal temperature distribution of the furnace and the feed rate of the atomizing medium per unit quantity of the fuel; then

(c) feeding signals indicative of the fuel flow rate to a rationing unit operating on said correlations; and

(d) automatically controlling the feed rate of the atomizing medium to an optimum value according to output signals from the rationing unit.

4,498,862

DEVICE FOR ADJUSTING THE VERTICAL POSITION OF WICK IN OIL BURNER

Kazuharu Nakamura, Nagoya, and Yutaka Nakanishi, Kounan, both of Japan, assignors to Toyotomi Kogyo Co., Ltd., Nagoya, Japan

Filed Nov. 28, 1983, Ser. No. 555,727

Claims priority, application Japan, Nov. 27, 1982, 57-179545[U]

Int. Cl.³ F23N *5/24*

U.S. Cl. 431—88 **9 Claims**

1. A device for adjusting the vertical position of a wick in an oil burner, comprising:

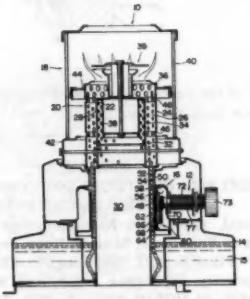
a burner body;

a wick operating shaft mounted on said body and adapted to be rotated to vertically move such a wick;

a gear loosely fitted on said wick operating shaft and having a return spring connected between said gear and said body;

a stopper means mounted on said body and forced by a spring means toward said gear to be engaged with said gear;

means connected between said wick operating shaft and said gear for rotating said gear with said wick operating shaft to wind said return spring when said wick operating shaft



is rotated to move such a wick upwardly and for reversing said wick operating shaft as said return spring unwinds when said stopper means is moved to be disengaged from said gear;

a control member loosely fitted on said wick operating shaft and provided with a stopper actuating portion for moving said stopper means against said spring means to release the engagement between said stopper means and said gear; and

means for engaging said control member with said wick operating shaft and said gear at a desired position.

4,498,863

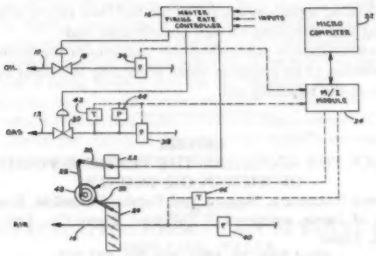
FEED FORWARD COMBUSTION CONTROL SYSTEM

Robert C. Hanson, Excelsior, and Leon C. Hanson, Bloomington, both of Minn., assignors to Hays-Republic Corporation, Riviera Beach, Fla.

Continuation of Ser. No. 253,713, Apr. 13, 1981, abandoned. This application May 23, 1983, Ser. No. 496,337

Int. Cl.[3] **F23N** *1/00*

U.S. Cl. 431—89 **7 Claims**



1. A method of controlling air supplied to a combustion process, prior to actual combustion, in which fuel is supplied to the combustion process through a fuel supply line and air is supplied to the combustion process through an air supply line, the method comprising:

sensing fuel flow rate in the fuel supply line; sensing air flow rate in the air supply line;

determining a desired stoichiometric air flow rate as a function of the sensed fuel flow rate;

determining the firing rate of the combustion process as a function of sensed fuel flow rate;

determining a desired excess air flow rate from stored values of excess air required for the determined firing rate;

determining a desired total air flow rate from the desired stoichiometric air flow rate and from the desired excess air flow rate; and

adjusting air flow in the air supply line as a function of the sensed air flow rate and the desired total air flow rate prior to the combustion process in an equal air flow percentage control action regardless of whether said firing rate is high or low, so that the trim action of said adjusting is greater at said high firing rate.

4,498,864

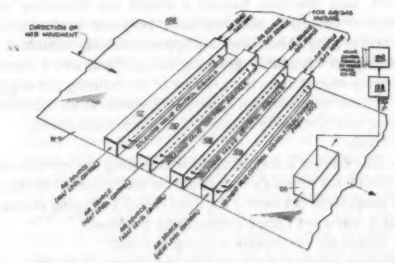
METHOD AND APPARATUS FOR UNIFORMLY DRYING MOVING WEBS

Reinhold C. Roth, Newport, and Richard F. Terra, Middletown, both of R.I., assignors to Techmark Corporation, Newport, R.I.

Filed Dec. 10, 1982, Ser. No. 448,619

Int. Cl.[3] **F27B** *9/28;* **F26B** *19/00;* **F23D** *13/40;* **F27D** *19/00*

U.S. Cl. 432—8 **38 Claims**



28. Apparatus for improving the uniformity and percent of moisture content across a web undergoing drying comprising:

a plurality of elongated dryer units arranged transverse to the direction of movement of the web and each comprised of a plurality of dryer sections, each dryer section arranged to dry a particular section of the web;

each dryer section comprising a radiant energy emitter and means for receiving an air/gas mixture for heating the emitter when ignited, the proportion of which mixture controls the radiant energy output level of the associated dryer section;

regulating means for selectively regulating the air/gas mixture for each dryer section between predetermined upper and lower energy levels, said lower energy level being at least sufficient to sustain combustion of the air/gas mixture;

means for individually operating said regulating means to control drying across each of said dryer units to provide localized drying at a selected one of said upper and lower energy levels of any desired longitudinal section of the moving web, the amount of localized drying being the cumulative sum of the individual dryer sections of said dryer units for drying a section of the web to thereby achieve a more uniform moisture distribution across the web.

4,498,865

PROCEDURE FOR FIRING DENTAL PORCELAIN ON METAL

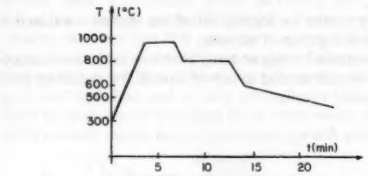
Herbert G. Schulmeyer, Messel, Fed. Rep. of Germany, assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Aug. 24, 1983, Ser. No. 526,022

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1982, 3231546

Int. Cl.³ F26B 9/12

U.S. Cl. 432—18 **12 Claims**



1. A method for preparing dental prostheses of the dental porcelain fused to metal type comprising, after the application of a dental porcelain material to a metal part to form a veneer, bringing the temperature of the veneer to a firing temperature, maintaining a firing temperature in the veneer for a time sufficient to provide a fusing of said dental porcelain, thereafter reducing the temperature of the veneer below said firing temperature by about 80° to about 280° C. to an intermediate temperature between the firing temperature and the ambient temperature, maintaining said intermediate temperature in the veneer, thereafter further reducing the temperature of the veneer to ambient temperature.

4,498,866

SAGGER FURNACE

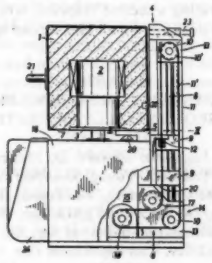
Karl H. Meislitzer, Wiesbaden, and Wigbert Hauner, Langen, both of Fed. Rep. of Germany, assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Feb. 1, 1983, Ser. No. 462,916

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205729

Int. Cl.³ F27D 3/00; C21D 1/74

U.S. Cl. 432—239 **9 Claims**



1. A dental ceramic firing furnace comprising a base supporting a stationary sagger platform, vertical guide rod means on said base at one side of said plateform, a firing chamber having an opening in the bottom thereof dimensioned for receiving said stationary sagger platform and including guide bushings slidable upon said guide rod means, and power means on said base engageable with said guide bushings and operable for lowering said firing chamber to receive said stationary sagger platform and raising said firing chamber above said stationary sagger platform to expose said stationary sagger platform for charging and emptying said stationary sagger platform.

4,498,867

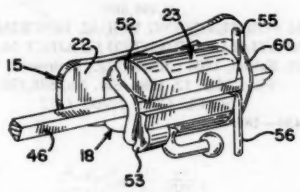
CONVERTIBLE ORTHODONTIC APPLIANCE

Peter C. Kesling, LaPorte, Ind., assignor to TP Laboratories, Inc., Westville, Ind.

Filed Jan. 31, 1984, Ser. No. 575,657

Int. Cl.³ A61C 7/00

U.S. Cl. 433—16 **2 Claims**



1. An orthodontic appliance for use in the light wire or edgewise system comprising, a sheath attachable to a tooth along an axis generally perpendicular to the long axis of the tooth and including an elongated mesiodistally extending body having a mesiodistally extending cylindrical opening and a mesiodistally extending slot on the side away from the tooth, and a wire receiving insert removably mountable in the opening of said sheath, and said insert including, a generally cylindrical body matingly slidable into said sheath opening, means coacting with said sheath for selectively locking the insert to the sheath, ligating wings on one end, said selective locking means on the other end and including a pair of bendable locking tabs which when bent over the corresponding end of said sheath function as ligating wings, means coacting with the sheath slot to prevent relative rotation between the insert and sheath, and a mesiodistally extending wire receiving opening or slot, said wire receiving opening being shaped to receive a rectangular or square wire and be open horizontally through the sheath slot to permit the appliance to function as an edgewise bracket, and said means preventing rotation being disposed to align the insert opening with the sheath slot.

4,498,868

DENTAL HAND PIECE

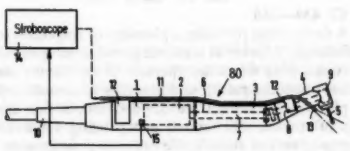
Werner Schuss, Heppenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,408

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129932; May 19, 1982, 3219017

Int. Cl.³ A61C 3/02

U.S. Cl. 433—29 **16 Claims**



1. In a dental hand piece arrangement having a housing, a tool mounted in the housing for movement, drive means disposed in the housing for placing the tool in motion with a motion frequency, said dirve means including a drive motor and a drive train of at least one drive shaft, said drive train

being coupled to the tool to rotate the tool, and illumination means having an exit end mounted adjacent the tool for projecting light from the exit end at a tip of the tool, the improvements comprising said illumination means including a stroboscopic means for creating light pulses having a light pulse frequency which coincides with the motion frequency of the tool in such a manner that the surface of the tool is visible during motion, said stroboscopic means comprising a stroboscopic diaphragm mounted on a drive shaft and the illumination means including at least one light conductor having a gap receiving said diaphragm.

4,498,869

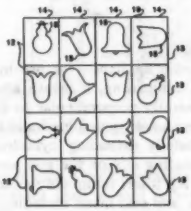
SYSTEM FOR TEACHING VISUAL DISCRIMINATION OF SPATIALLY ORIENTED SUBJECT MATTER

Marilyn D. Faison, 1404 Giltspur Rd., Richmond, Va. 23233

Filed Mar. 12, 1984, Ser. No. 588,198

Int. Cl.³ G09B *17/00, 1/32*

U.S. Cl. 434—184 **9 Claims**



1. An instructional system for training a person to more accurately interpret visually perceived stimuli, said system comprising a kit comprised of:

(a) figure pages, the front face of each having straight lines dividing the page into an array of rectangular spaces disposed in horizontal rows and vertical columns, said spaces containing randomly distributed closed line figures in at least two groups wherein the figures of a given group are identical but appear in different orientations, and identifying indicia in each rectangular space, and

(b) a set of checking cards for each figure page, the front faces of the cards of a given set containing figures corresponding to the figures on the front face of a corresponding figure page, and the rear face of each card containing identifying indicia corresponding to the identifying indicia on the front face of said figure page associated with the same figure, the number of cards in each set being equal to or greater than the number of spaces on the front face of the corresponding figure page.

4,498,870

STIMULUS/RESPONSE DEVICE

William J. Madonna, 100 Colette Ct., Oldsmar, Fla. 33557

Filed Apr. 9, 1984, Ser. No. 434,260

Int. Cl.³ G09B *7/06*

U.S. Cl. 434—335 **7 Claims**

1. A device that provides a plurality of responses to a plurality of stimuli, wherein at least one preselected specific response is provided only when the operator of the device successfully matches a specific pair of said plurality of stimuli, and wherein said plurality of stimuli are divided into a first and second group of stimuli, said second group being subdivided into a plurality of sets of stimuli, the ordered arrangement of which differs as between different sets, so that a successful matching of a stimulus from said first group with a stimulus from a selected set of stimuli from said second group does not indicate to said operator how to make successive matches, wherein the improvement comprises, in combination,

a first generating means for generating a first plurality of encoded signals, each of which first encoded signals represents a specific stimulus included in said first group of stimuli,

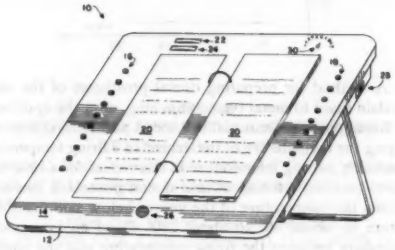
a second generating means for generating a second plurality of encoded signals, each of which second encoded signals represents a specific stimulus included in said second group of stimuli,

said first generating means being selectively operable to generate specific ones of said first plurality of encoded signals,

said second generating means being selectively operable to generate specific ones of said second plurality of encoded signals,

a memory means for storing all of the stimuli contained in said second group of stimuli,

a selector means having as many positions as there are sets of stimuli in said second group of stimuli for re-calling from



said memory means a specific set of stimuli from said second group of stimuli so that different sets of stimuli are re-called by each position of said selector means,

a comparison means operatively connected to said second generating means, and to said memory means,

said memory means adapted to transmit a first specific stimulus from a selected set of stimuli from said second group of stimuli to said comparison means responsive to selection by said operator of said first specific stimulus,

said first generating means adapted to transmit a second specific stimulus from said first group of stimuli to said comparison means responsive to selection by said operator of said second specific stimulus,

said comparison means providing a first response when said first specific stimulus matches said second specific stimulus, and providing a second response when said first specific stimulus does not match said second specific stimulus.

4,498,871

HYDRAULIC SYSTEM FOR MARINE PROPULSION DEVICE WITH SEQUENTIALLY OPERATING TILT AND TRIM MEANS

Charles B. Hall, Ingleside; Edward D. McBride, Waukegan, both of Ill., and Robert F. Young, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 252,813, Apr. 10, 1981, Pat. No. 4,395,239, and a continuation-in-part of Ser. No. 183,209, Sep. 2, 1980, Pat. No. 4,363,629. This application Dec. 2, 1982, Ser. No. 446,351

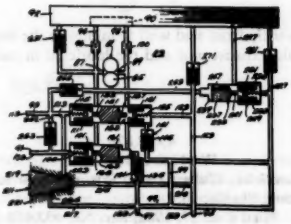
The portion of the term of this patent subsequent to Jul. 26, 2000, has been disclaimed.

Int. Cl.³ B63H *5/12*

U.S. Cl. 440—61 **12 Claims**

1. A marine propulsion device comprising transom bracket means adapted to be connected to a boat transom, a stern bracket, first pivot means connecting said stern bracket to said transom bracket means for pivotal movement therebetween about a first pivot axis which is horizontal when said transom bracket means is boat mounted, a swivel bracket, second pivot means connecting said swivel bracket to said stern bracket for

pivotal movement with said stern bracket and relative to said stern bracket about a second pivot axis parallel to said first pivot axis, a propulsion unit including, at the lower end thereof, a rotatably mounted propeller, means pivotally connecting said propulsion unit to said swivel bracket for steering movement relative to said swivel bracket and for common pivotal movement with said swivel bracket, a trim cylinder-piston assembly pivotally connected to said stern bracket and to said swivel bracket and including first and second ends, a tilt cylinder-piston assembly pivotally connect to said transom bracket means and to said stern bracket and including first and second ends, a reversible pump including first and second ports, first conduit means including first valve means communicating between said first pump port and said first end of said trim cylinder-piston assembly, second conduit means including second valve means communicating between said first pump port and said first end of said tilt cylinder-piston assembly, third conduit means including third valve means dividing said third conduit means into an upstream portion communicating



with said second pump port and a downstream portion communicating with said second end of said trim cylinder-piston assembly, fourth conduit means including fourth valve means dividing said fourth conduit means into an upstream portion communicating with said second pump port and a downstream portion communicating with said second end of said tilt cylinder-piston assembly, and let-down means communicating between said sump and said downstream portion of one of said third and fourth conduit means and including a let-down valve preventing flow from said sump to said downstream portion of said one of said third and fourth conduit means and selectively permitting flow from said downstream portion of said one of said third and fourth conduit means to said sump, and means for selectively opening said let-down valve including a piston engageable with said let-down valve, and a duct communicating between said piston and said second conduit means and including therein valve means preventing flow to said second conduit means and permitting flow from said second conduit means to said piston in response to pressure in said second conduit means above a predetermined level.

4,498,872

LIFESAVER TROLLING MOTOR MOUNT

Ivan T. Shonley, H.C. 55 Box 841, and Orville J. Rock, H.C. 55 Box 877, both of Sturgis, S. Dak. 57785

Filed Jul. 25, 1983, Ser. No. 381,589
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—63 **2 Claims**

1. A motor mount for attaching an auxiliary motor of limited horsepower to a boat having a main drive unit which main drive unit is pivotably movable between an up position wherein the drive unit is raised out of the water, a down position wherein the drive unit is lowered into the water and has horizontal movement to both right and left of center, said motor mount comprising:

(a) a first leg having means at its lower end for pivotal connection to the upper portion of the said drive unit;

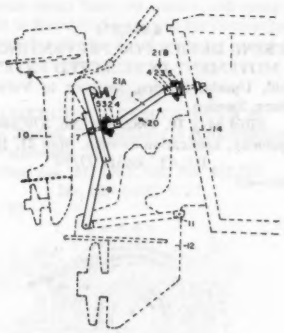
(b) a second leg having means at its lower end for pivotal connection to the upper portion of the said drive unit;

(c) a mounting board adapted to accept a clamping device on an auxiliary motor;

(d) said first and second legs being pivotably attached at their lower ends to opposite sides of main drive unit;

(e) said mounting board is attached to each leg at the upper end;

(f) a connecting arm connecting said mounting board to the transom of the boat;



(g) a first double swivel having means for bolting to the transom of the boat and means for attachment to one end of said connecting arm;

(h) a second double swivel having means for bolting to said mounting board and means for attachment to the other end of said connecting arm;

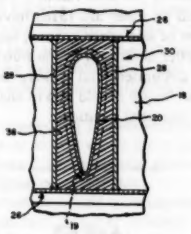
(i) said connecting arm having holes drilled through each end as a means to connect to said first and second double swivels.

4,498,873

SURFACE EFFECT SHIP PROPELLER MOUNT

John B. Chaplin, Covington, and Edward G. Ganczak, Slidell, both of La., assignors to Textron Inc., Providence, R.I.

Filed Jun. 23, 1983, Ser. No. 507,131
Int. Cl.³ B63H *23/32*
U.S. Cl. 440—82 **6 Claims**



1. A ship having a hull including a side hull bottomed by an underwater operationally wet aluminum alloy keel plate having an opening extending therethrough and an interior operationally dry aluminum alloy structural member;

a steel strut having an inner end mechanically anchored to said structural member and an outer end for supporting bearing means for carrying a ship propeller shaft, said strut freely extending through said opening;

a fence formed of aluminum alloy and fixed to said keel plate within said side hull and arranged to surround said opening and said strut in spaced relationship therefrom; and

a solid but somewhat resilient body of material chemically inert to sea water filling said fence about said strut to

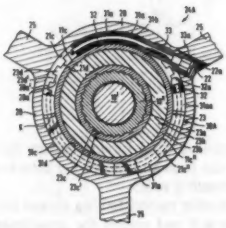
water-seal said opening and provide said strut with a support in the region of said keel plate for dampening vibrational stress traveling through said strut and avoiding dissimilar metal sea water electrolytic action between said strut and said keel plate.

4,498,874

BLOCKING DEVICE FOR PREVENTING AXIAL MOVEMENT IN SELECTED EXTENT

Heinz Pichl, Upsala, Sweden, assignor to Volvo Penta AB, Gothenburg, Sweden

Filed May 18, 1982, Ser. No. 379,348
Claims priority, application Sweden, May 21, 1981, 8103203
Int. Cl.³ B63H *23/34*
U.S. Cl. 440—83 **21 Claims**



1. In a blocking device for limited axial movement between a first body (**20**) having a cylindrical inner wall defining an opening, and a second body (**23**) having a cylindrical outer wall fitting into said opening, said inner and outer walls having a respective outer and inner circumferential groove (**11***c*, **21***c*), and in juxtaposed position complementing each other to form a circumferential channel (**K**), said first body having an access port (**22**), a locking means (**30A**) introducible through said access port and including a plurality of massive and substantially rigid, separated link members (**31***a*, **131***c*), said link members having in a radial direction substantially the same dimension as said channel and being circumferentially limited by an outer arc (**31***c*) having the same radius (r') as the bottom of said outer groove, and an inner arc (**31***d*) having the same radius (r'') as the bottom of said inner groove, said device is used for blocking a propeller shaft (**10**) in the hub of a boat propeller (**24**), said outer circumferential groove being located in the middle of the axial length of said hub to enable mounting of the propeller in two reversed positions.

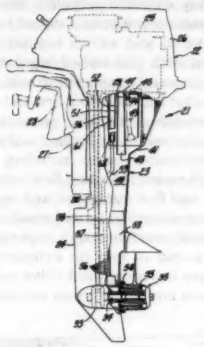
4,498,875

OUTBOARD MOTOR

Eifu Watanabe, Hamamatsu, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Filed Sep. 2, 1982, Ser. No. 414,034
Claims priority, application Japan, Sep. 10, 1981, 56-142664
Int. Cl.³ B63H *21/10*
U.S. Cl. 440—88 **8 Claims**

6. In an outboard motor or the like comprising a power head having an internal combustion engine having an exhaust system including an exhaust outlet pipe, an oil sump depending from said engine and adapted to contain lubricant therefor, the improvement comprising said oil sump having a wall encircling at least a portion of the length of said exhaust outlet pipe defining a vertically extending opening therethrough, said exhaust outlet pipe extending through said opening and being



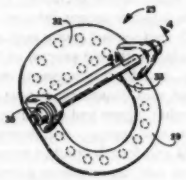
spaced inwardly from said wall to minimize the heat exchange between said exhaust pipe and the lubricant in said oil sump.

4,498,876

WATER SHUTTER

Alvin R. Zemlicka, Elkhart Lake, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 27, 1982, Ser. No. 453,450
Int. Cl.³ F01N *3/00*
U.S. Cl. 440—89 **3 Claims**



1. A stern drive for propulsion of a boat comprising:

(A) an inboard engine;

(B) an outboard drive unit coupled to said engine;

(C) an exhaust passageway coupled to receive exhaust from said engine, said exhaust passageway having a discharge end for discharging exhaust below the surface of the water on which said boat is operated;

and

(D) a valve mounted in said exhaust passageway for preventing the flow of water to said engine and allowing the passage of exhaust from said engine, said valve including:

(1) a pivot shaft extending across said passageway; and

(2) a valve member pivotally mounted on said shaft, said valve member having;

(a) a generally planar metal plate member with a lug on each side extending generally perpendicular to the plane of said plate member, said lugs having holes therethrough for pivotal attachment to said shaft; and

(b) an elastomer mechanically and chemically bonded to said metal plate member on both sides of said plate member, said elastomer forming a flexible lip around the periphery of said plate member to seal against the walls of said exhaust passageway when said valve member is positioned to close said exhaust passageway, said elastomer formed around said lugs to act as a bearing on said shaft.

4,498,877

ANCHORING SYSTEM FOR A BUOY, SPECIALLY A MEASURING BUOY

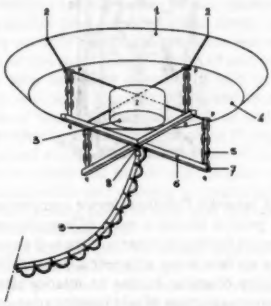
Petrus J. Rademakers, Aerdenhout, Netherlands, assignor to Datawell B.V., Netherlands

Filed Jan. 11, 1982, Ser. No. 338,625

Claims priority, application Netherlands, Jan. 15, 1981, 8100165

Int. Cl.³ B63B *21/52*

U.S. Cl. 441—23 8 Claims



1. An anchoring system for a buoy, said buoy being adapted to follow the wave slopes of a water surface in which it floats, having an anchoring line connection member connected to an anchoring line at an anchoring line attachment point, at least two non-extensible and parallel links connecting said anchoring line connection member to said buoy, said links having equal length from their point of attachment to said anchoring line connection member to their point of attachment to said buoy, the mutual configuration in space of (a) said points of attachment to said anchoring line connection member and (b) said points of attachment to said buoy, being identical, and wherein the point of impact of the anchoring line force, taken with respect to the points of attachment of the links to the buoy, is fixed and located in the same position as is the anchoring line attachment point, taken with respect to the points of attachment of the links to the anchoring line connection member, said point of impact of the anchoring line force being located inside a body part of said buoy, said anchoring line and said links being connected to said anchoring line connection member and said buoy such that said line and said links are free to extend from said anchoring line connection member and said buoy in all directions having an vertical component.

4,498,878

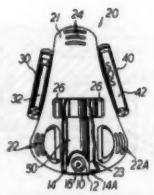
SAFETY DIVING BACKPACK

Shin-Shi Shieh, 56-3, Kien Kwo N. Rd., Taipei, Taiwan

Filed Aug. 31, 1982, Ser. No. 413,283

Int. Cl.³ B63B *21/52*

U.S. Cl. 441—80 4 Claims



1. A safety diving backpack, comprising a salvage backpack body, a watertight handlight, a life buoy, a water kettle and a reel wheel, the backpack body being formed in one piece complete with two hollow cylinders on both sides thereof serving to set in the handlight and the life buoy respectively, the center portion of the backpack projecting outwards to let in a water kettle and a reel wheel wound with nylon ropes that will all come to service in case of emergency, thereby providing means for sustaining the life of an endangered diver or for releasing emergency help-seeking signals for search and rescue teams or other vessels or aircrafts passing by; the water kettle being complete with two passage holes on the bottom to be covered with two kettle cocks to keep drinkable water as contained therein intact from sea waters, and being complete with fixing fins to facilitate fixing onto the counterpart hollow spaces as provided in the backpack body by means of screws.

4,498,879

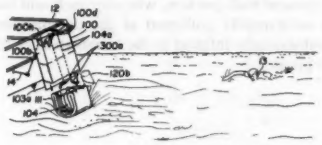
EMERGENCY RESCUE DEVICE

J. Kelsey Burr, Jupiter, Fla., assignor to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Jan. 31, 1983, Ser. No. 462,213

Int. Cl.³ B63C *9/22*

U.S. Cl. 441—80 7 Claims



1. An emergency rescue assembly for deployment from a boat to rescue a person in a body of water comprising in combination:

a container including side walls and a top wall fixed together to define an open ended bottom;

said container further including a bottom panel adapted to be closed over said open ended bottom;

means for releasably securing said bottom panel over said open ended bottom;

means for attaching said container to the vehicle in an overhanging position above the body of water;

an inflatable personal flotation device stored within said container;

first means for automatically inflating said personal flotation device;

an inflatable signal cone comprising an elongated cone-shaped air-filled bladder capable of remaining erect upon inflation and a weight disposed at the bottom end thereof for maintaining said signal cone in an upright position in the body of water upon inflation of said bladder;

second means for automatically inflating said signal cone;

a sea anchor;

first tether means connecting said sea anchor to said personal flotation device or to said signal cone; and

second tether means connecting said personal flotation device and said signal cone together,

whereby, upon actuation of said securing means, said bottom panel falls open, said personal flotation device and said signal cone fall directly from within said container into the body of water, and both said inflating means are actuated to inflate said personal flotation device and said signal cone after dropping from within said container.

4,498,880

HURLABLE WATER RESCUE AID

Mark D. Curley, P.O. Box 296, Verdugo City, Calif. 91046

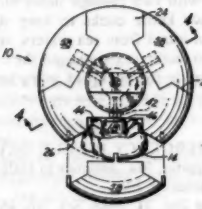
Filed Feb. 22, 1983, Ser. No. 455,538

Int. Cl.³ B63C *9/16*

U.S. Cl. 441—81 16 Claims

1. Hurlable, water rescue aid comprising a plurality of initially collapsed, gas-inflatable buoyancy elements each having a neck portion, a ball-shaped bracket supporting said buoyancy

elements in collapsed condition generally within the locus of said bracket, a compressed gas supply within said bracket for inflating said elements, means adapted to release said gas supply from compression in advance of hurling said aid toward a person to be rescued, and means metering flow of released gas



from said supply into each said buoyancy element comprising a passageway of greatly reduced diameter relative to said buoyancy element neck portion, whereby each said buoyancy element is substantially collapsed at the commencement of flight but substantially inflated at the termination of flight for use by said person.

4,498,881

INFLATABLE ARTICLES

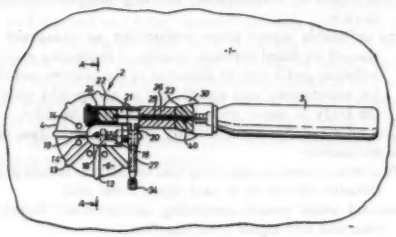
Brain L. Buckle, Colwyn Bay, Wales, assignor to E. C. Hopkins Limited, West Midlands, England

Filed Sep. 16, 1981, Ser. No. 302,702

Claims priority, application United Kingdom, Sep. 16, 1980, 8029827; Mar. 16, 1981, 8108132

Int. Cl.³ B63C *9/12*

U.S. Cl. 441—93 **15 Claims**



1. A device for automatically inflating an inflatable article on change of ambient pressure, the device including means for comparing the ambient fluid pressure with the pressure within a closed compartment, a container for a compressed gas for inflating the article, a piston slidably located in a cylinder and arranged to release compressed gas from the container to inflate the article on movement of the piston towards one end of the cylinder, means for resiliently biasing the piston towards the said end of the cylinder, an inlet valve to enable the cylinder to be pressurised to retain the piston against the said biasing means, and means responsive to the comparing means, to release pressure in the cylinder and thereby allow movement of the piston by the biasing means to release the compressed gas and inflate the article.

4,498,882

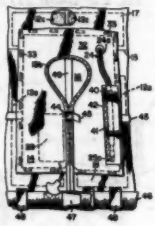
HYBRID PERSONAL FLOTATION DEVICE

Karla R. Evert, St. Cloud, Minn., assignor to Stearns Manufacturing Company, St. Cloud, Minn.

Filed Mar. 8, 1983, Ser. No. 473,221

Int. Cl.³ B63C *9/16*

U.S. Cl. 441—116 **11 Claims**



1. A hybrid personal flotation device comprising:

(a) a panel portion having a mass of buoyant material, said panel portion having an inner surface and an outer surface, said inner surface being adjacent a wearer's body;

(b) a buoyancy chamber having an interior zone and a peripheral zone, a portion of said interior zone cooperatively connected to said panel portion, said peripheral zone being unattached to said panel portion, whereby said peripheral zone may be folded and when said buoyancy chamber is folded, said buoyancy chamber covers a smaller area than when said buoyancy chamber is unfolded;

(c) means for inflating said buoyancy chamber; and

(d) a covering panel cooperatively connected to said panel portion, said buoyancy chamber positioned between said panel portion and said covering panel, said covering panel having outer edges releasably connected to said panel portion, whereby when said buoyancy chamber is uninflated, said outer edge of said covering panel is secured to said panel portion and said buoyancy chamber is folded and hidden from view by said covering panel and when said buoyancy chamber is inflated, said outer edges of said covering panel are released and said buoyancy chamber expands, unfolds and is visible.

4,498,883

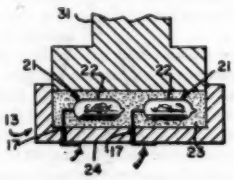
METHOD OF ENCAPSULATING A PHOTOFLASH LAMP USING A POWDERED RESIN

Andre C. Bouchard, Peabody, and Harold H. Hall, Jr., Marblehead, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 308,636, Oct. 5, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,440

Int. Cl.³ B29C *6/04*; H05B *41/32*

U.S. Cl. 445—28 **14 Claims**



1. A method of forming a protective coating on the glass envelopes of a plurality of photoflash lamps wherein each of said envelopes includes a combustion-supporting gas therein

established at several atmospheres of pressure and a pair of thin lead-in wires projecting from said envelope, said method comprising:

providing a mold member including a plurality of openings therein;

positioning a first quantity of a powdered thermoplastic or thermosetting resin material capable of forming a light-transmitting, solid polymer upon application of heat and pressure thereto within said mold member to a preestablished depth within said mold member;

inserting each of said thin lead-in wires of said photoflash lamps within a respective one of said openings within said mold member to a predetermined depth and thereafter bending portions of said lead-in wires against an external surface of said mold member, each of said glass envelopes resting atop said first quantity of said powdered resin material and being spacedly positioned from the internal surfaces of said mold member, each of said lead-in wires being further bent at an angle of about 90 degrees from the longitudinal axis of the respective one of said glass envelopes from which said lead-in wire projects after said wire is inserted within said opening to enable said envelope to attain said resting position atop said first quantity of said powdered resin material;

positioning a second quantity of said powdered resin material within said mold member to cover each of said envelopes, said powdered resin material thereby surrounding the external surfaces of said envelopes;

simultaneously applying pressure and heat to said powdered resin material sufficient to liquify said powdered resin material about said glass envelopes, said pressure within the range of from about 500 to about 8000 pounds per square inch and said temperature sufficient to heat said powdered resin material about said glass envelopes within the range of from about 200 to about 400 degrees Farenheit, said thin lead-in wires assisting in retaining said glass envelopes in said spaced positioning relationship within said mold member during said simultaneous application of said heat and pressure to said powdered resin material;

cooling said liquified material to form said light-transmitting, solid polymer about said glass envelopes;

and

removing said solid polymer material having said glass envelopes therein from said mold member, portions of said lead-in wires projecting from said glass envelopes and extending from said solid polymer upon removal from said mold member, said method further including removing all of said extending portions.

4,498,884

METHOD OF MANUFACTURING A DISPLAY TUBE

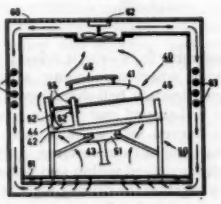
Johannes H. Stöver, and Johannes A. Van Leeuwen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1982, Ser. No. 347,765

Claims priority, application Netherlands, Mar. 16, 1981, 8101263

Int. Cl.³ F23M *9/04*

U.S. Cl. 445—45 **8 Claims**



1. A method of manufacturing a display tube, comprising a funnel with a rectangular edge and a display screen having a rectangular upstanding edge, wherein heat is applied to the tube by means of a heated gas flowing across the tube's outer surface, the improvement comprising restricting said flow at a selected area of said outer surface by providing a heat shield including a pattern of apertures in the proximity of said area to minimize differences in thermal expansion between the tube's outer and inner surfaces.

4,498,885

SPACE DIVERSITY SYSTEM

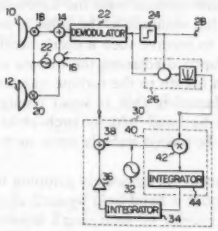
Junji Namiki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 11, 1983, Ser. No. 512,649

Claims priority, application Japan, Jul. 14, 1982, 57-122716

Int. Cl.³ H04B *7/08*

U.S. Cl. 455—273 **4 Claims**



1. A space diversity system in which a first antenna receives a first direct wave and a first interference wave and a second antenna receives a second direct wave and a second interference wave, the system controlling an output phase of the second antenna to combine an output thereof with an output of the first antenna so that the first and second interference waves cancel each other and a vector sum of the first and second direct waves is provided as a combined output, said system comprising:

a variable phase shifter for controlling the output phase of the second antenna;

a demodulator for receiving the combined output of the two antennas;

an identification circuit for identifying a digital signal output from said demodulator;

an error detector for detecting a magnitude of a difference between an input signal and an output signal of said identification circuit;

an oscillator for oscillating a signal having a short period;

a correlation circuit for determining a correlation between an output of said oscillator and an output of the error detector;

an integrator for integrating an output of said correlation circuit; and

means for controlling the phase shifter in such a manner as to minimize the output of the error detector by adding an output of the integrator and an output of the oscillator and supplying the sum to the phase shifter as a control signal.

4,498,886

WHEELED TURBINE-POWERED TOY VEHICLE AND LAUNCHER APPARATUS

Adolph E. Goldfarb, 1432 S. East Wind Clr., Westlake Village, Calif. 91361, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Westlake Village, Calif.

Continuation of Ser. No. 275,982, Jun. 22, 1981, Pat. No. 4,373,290. This application Feb. 14, 1983, Ser. No. 466,081

Int. Cl.³ A63H *33/40*

U.S. Cl. 446—202 **9 Claims**

1. In combination, a turbine-powered wheeled toy vehicle for energization by a child user's breath and for operation on a

play surface, and a launcher for such vehicle; said combination being adapted to permit such child user to hold the vehicle and launcher in his hand, in an energization position, and to use his breath to bring the vehicle turbine up to speed when the vehicle and launcher are held in such an energization position, and to place the vehicle and launcher in a proper release position upon such play surface after the turbine is up to speed, and to then release the vehicle onto such play surface in an operating position, with the turbine still up to speed and with the vehicle in a suitable orientation relative to such play surface; said combination comprising:

(a) a toy vehicle that is small enough to be readily hand-held by such child user and that has:

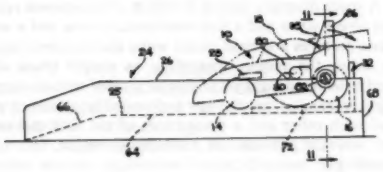
a flywheel that is rotatably mounted to the vehicle, and that is positioned and adapted to engage such surface and thereby to propel the vehicle relative to such surface,

an air turbine integral with the flywheel, and

an air conduit mounted to the vehicle, and having an inlet adapted to receive such a user's breath, and having an outlet disposed adjacent the turbine to effectively convey such breath to the turbine to energize the turbine;

(b) a small launcher that is small enough and otherwise adapted to be hand-held by such child user and that is adapted to be placed stablely upon such surface, and that comprises:

gripping means for releasably gripping the vehicle, while the launcher is hand-held by such child user, in condition for receipt of such user's breath by the conduit inlet,



supporting means for supporting the vehicle, with the flywheel disengaged from the launcher, and with the flywheel disengaged from such surface even if the launcher is placed upon such surface, for free-wheeling rotation by the flywheel when the vehicle is gripped by the gripping means and when such user's breath is received by the conduit inlet,

releasing means, actuable by such user, for releasing the vehicle from the gripping means, and

impelling means for impelling the vehicle, when it is released by the gripping means, from the launcher to such surface so that the flywheel can engage such surface to propel the vehicle;

whereby said combination assists such child user to use his breath to bring the vehicle turbine up to speed when the vehicle and launcher are held in the child user's hand in such an energization position, and to place the vehicle and launcher in a proper release position upon such play surface after the turbine is up to speed, and to then release the vehicle onto such play surface in an operating position, with the turbine still up to speed and with the vehicle in a suitable orientation relative to such play surface; and

a blow tube that is:

secured to the launcher;

adapted to be placed in such user's mouth, while the launcher is hand-held by such user, to receive such user's breath; and

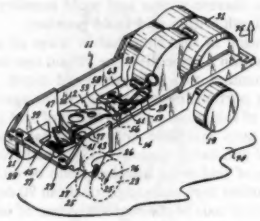
positioned, aligned, and adapted to convey such breath to the inlet of the air conduit of the vehicle, when the vehicle is gripped by the gripping means.

4,498,887

SHIFTING MECHANISM FOR TOY VEHICLE

John S. Cook, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Apr. 20, 1983, Ser. No. 486,622
Int. Cl.³ A63H *29/20*
U.S. Cl. 446—462 **10 Claims**



1. In a toy vehicle combination comprising:

vehicle movement changing drive means mounted in said vehicle and responsive to actuation of a gear shift lever mounted in said vehicle from a first position to at least one other position, means in said vehicle for retaining said gear shift lever in said first position against biasing means in said vehicle urging said gear shift lever toward a said other position;

at least one non-driven support wheel member coupled to said vehicle for rotation in response to movement of the vehicle on the surface;

gear means coupled for rotation with said at least one wheel member;

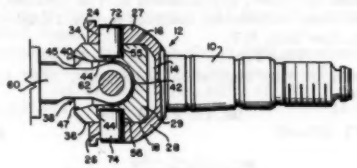
linkage means having a trigger portion configured mounted in said vehicle and positioned for engaging said gear shift lever in said first position; and a gear sector operatively coupled to said linkage means and coacting with said gear means for enabling movement of said trigger portion to enable actuation of said gear shift lever to said at least one other position for effecting vehicle movement changing during travel of said vehicle on a surface.

4,498,888

DRIVE ASSEMBLY COUPLING

William Pastor, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 10, 1983, Ser. No. 474,152
Int. Cl.³ F16D *3/26*
U.S. Cl. 464—112 **4 Claims**



1. A drive assembly for a vehicle driving wheel column with a tiltable driving wheel comprising: a driving wheel shaft having an approximately bell-shaped end portion, the inside surface of the bell-shaped end portion having two diametrically opposite curved side surfaces, and two diametrically opposite flat top and bottom surfaces; a driven shaft; a solid coupling member received within said bell-shaped end portion and connecting together the driving wheel shaft and the driven shaft; the coupling member having curved side surfaces adjacent and spaced from the curved side inside surfaces of the bell-shaped end portion of the driving wheel shaft, top and bottom flat surfaces adjacent and touching the flat inside sur-

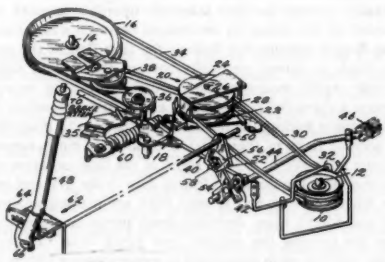
faces of the bell-shaped end portion of the driving wheel shaft and a slot on one side and receiving in said slot the end portion of the driven shaft the surfaces forming said slot being shaped to permit limited upward or downward pivotal movement, only of the coupling member with respect to the driven shaft; a long pin received in appropriate apertures in the coupling member, said pin extending across the slot and through an appropriate aperture n the driven shaft end portion; and a pair of diametrically opposite short pins received in appropriate apertures in the coupling member with their axes aligned and perpendicular to the axis of the long pin, each short pin also extending into an appropriate aperture in the bell-shaped end portion, whereby the driven wheel shaft and the coupling member, as a unit, may be pivoted a limited amount about the lon pin; the solid coupling member being completely solid except for said slot and said apertures in the coupling member.

4,498,889

VARIATOR DRIVE SYSTEM

Aaron A. Stevens, Springhill, and Randall K. Lawrence, Fairview, both of Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.

Filed Jul. 7, 1983, Ser. No. 511,624
Int. Cl.³ F16H *7/12*
U.S. Cl. 474—133 **4 Claims**



1. A variable speed drive system for a groundengaging vehicle having an engine power source, said system comprising:

a drive pulley connected to an output shaft of said power source;

a support member pivotally connected to said vehicle;

a variator rotatably supported adjacent an end of said member, said variator including first and second belt-receiving portions separated by an element movable along the axis of rotation of the variator for varying the widths of said portions in response to the relative tautness of belts received in said portions;

an additional pulley operatively connected to a shaft for powering said vehilcle;

a first belt operatively related to the drive pulley and received in the first belt-receiving portion of said variator;

a second belt operatively related to the additional pulley and received in the second belt-receiving portion of said variator;

a first idler pulley rotatably connected to said vehicle at a fixed position and engaging said second belt;

a second idler pulley also engaging said second belt and rotatably joined to one end of an idler arm, the opposite end of said arm being pivotally connected to said vehicle;

spring means extending between the support member and the idler arm for urging said member and idler towards one another in opposite directions about their respective pivotal connections whereby the tautness of the second belt is established by the relative positions of the idler pulleys and the variator;

a speed control shaft rotatably supported by said vehicle;

a pedal joined to said speed control shaft to cause rotation thereof in response to actuation of said pedal;

a control handle connected to the speed control shaft to cause rotation thereof in response to actuation of the handle;

means provided in the connection between said handle and the speed control shaft for permitting rotation of said shaft in response to actuation of the pedal independently of the position of said handle; and

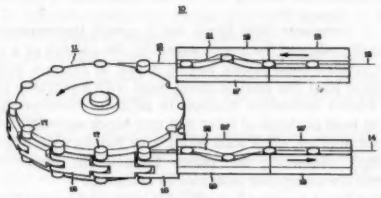
a variator drive control link connecting the speed control shaft to said support member whereby rotation of the speed control shaft is translated to pivotal movement of the support member to thereby alter the relative positions of the idler pulleys and the variator.

4,498,890

FIXED TRACK CHAIN DRIVE

George H. Sutherland, Richmond Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,854
Int. Cl.³ F16H *7/18*
U.S. Cl. 474—140 **9 Claims**



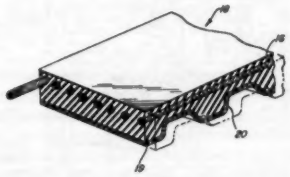
1. A guidance system to avoid velocity fluctuation in a fixed track chain drive caused when the chain enters and exits a drive sprocket during continued travel between straight tracks which comprises locating a pair of curved track sections between said drive sprocket and said straight tracks having different curvature paths, said curved track sections having a projected length approximately equal to the length of a chain link and with a varying curvature being defined by a depth from said projected length approximately equal to the locus of intersection between two circles each having a radius equal to the length of a chain link and with centers being located by adjacent pins, and with the curvature path in each of said curved track sections having a mirror image relationship with the other curvature path.

4,498,891

DRIVE BELT WITH TENSILE CORDS

Satoshi Mashimo, Akashi; Masayuki Tanaka, Kobe, and Takashi Kinoshita, Hyogo, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Feb. 4, 1983, Ser. No. 463,805
Claims priority, application Japan, Feb. 5, 1982, 57-15334[U]
Int. Cl.³ F16G *1/04*
U.S. Cl. 474—205 **24 Claims**



1. In a drive belt having a belt body, the improvement comprising

a plurality of Lang-twisted, fiber tensile cords extending longitudinally in the belt body, the cords having a ply

twist constant in the range of approximately 2.9 to 3.9 and a cable twist constant of less than the ply twist constant.

4,498,892

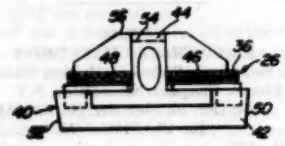
POWER TRANSMISSION BELT

Peter Huntley, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 14, 1983, Ser. No. 475,006

Int. Cl.³ F16G *1/22*

U.S. Cl. 474—242 **10 Claims**



1. A composite load block for a power transmission belt especially adapted for interconnecting the pulleys of a pulley drive system, each pulley having a pair of flanges, said belt having at least one endless metal band with a plurality of said load blocks assembled thereon in adjacent relationship and with at least portions of front and rear block surfaces contacting one another, each load block also having side edges for drivingly contacting the pulley flanges, the improvement wherein the composite load blocks comprise:

a first block member having front, rear and top surfaces, at least one slot defined by at least one surface and adapted to receive the endless band, and a notch at an uppermost top surface; and

a second block member having tab portions embracing parts of said front and rear surfaces of said first block member at a location closely adjacent to said slot, including an elastically yieldable portion positioned between the endless band and the surface of said slot, and a lip portion extending outwardly from one of said tab portions;

said lip portion being received in a notch in a next adjacent one of said composite load block when said composite load blocks are assembled with said endless band.

4,498,893

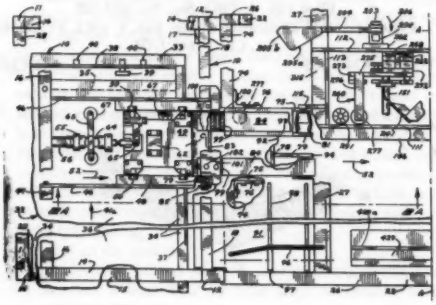
CASE ERECTOR AND BOTTOM SEALER APPARATUS

Robert E. Odom, Blaine, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Jan. 28, 1982, Ser. No. 343,451

Int. Cl.³ B31B *1/80*

U.S. Cl. 493—12 **16 Claims**



1. For erecting and folding a flat folded case blank having minor first and second flaps, which are respectively joined along fold lines to the to transverse ends of first and second minor side walls of a case blank, and major third and fourth flaps, which are respectively joined along fold lines to one transverse ends of major third and fourth sidewalls, each of said flaps having a longitudinally extending terminal edge substantially parallel to the respective fold line and substantially spaced therefrom and the minor sidewalls being joined to opposed edges of the major sidewalls, case erector and bottom sealer apparatus comprising a longitudinally elongated frame having a rear end portion and a front end portion, first means at the frame rear end portion for supporting a stack of the flat folded blanks in vertical stacked relationship with each blank having its first and third flaps and sidewalls above its second and fourth flaps and sidewalls second means on the frame for picking up a flat folded case blank from the stack of case blanks on the first means and feeding the picked up blank forwardly to a case blank erecting station on the frame, third means mounted on the frame for supporting a case blank at the erecting station, fourth means mounted on the frame for releasably grippingly engaging at least one of the fourth flap and fourth sidewall of a case blank at the erector station, operable fifth means mounted on the frame for releasably grippingly engaging at least one of the third flap and third sidewall of a case blank grippingly engaged by the fourth means and erecting the gripped case blank, operable sixth means mounted on the frame for movement between a retracted and a flap folded position for folding the second flap of the erected case blank to extend generally toward the first sidewall, operable seventh means mounted on the frame for movement between a retracted and a flap folded position for folding the first flap of the erected case blank to extend generally toward the second sidewall, operable eighth means mounted on the frame for movement between a retracted position and a flap folded position for at least partially folding the third and fourth flaps to hold the first and second flaps in their folded condition, ninth means for applying adhesive to at least some of the flaps on areas of the flaps to adhere the third and fourth flaps to the first and second flaps when the first and second flaps are pressed against the third and fourth flaps, operable tenth means mounted on the frame for moving the erected case blank from the erecting station, past the ninth means and to a compression station at the frame front end portion, eleventh means on the frame for supporting an erected case blank as it is moved from the erecting station to the frame front end portion, operable twelfth means on the frame at the frame front end portion to compress the flaps to form a sealed case closure and control means for operating the second and fourth means and controlling the operation of the fifth, sixth, seventh, eighth, tenth and twelfth operable means, the second means including means for supportingly conveying at least one of the fourth flap and the fourth sidewall, and the eighth means including lower flap folder means for moving from a retracted position to a flap folded position for folding the fourth flap and means joined to the lower folder means for movement therewith for stopping forward movement of a case blank on the supportingly conveying means when the lower folder means is in its folded position.

4,498,894

SEPARATION APPARATUS FOR SEPARATING PERFORATED PAPER TUBE SECTIONS

Gustav Kuckhermann, Achern-Oberachern, Fed. Rep. of Germany, assignor to Icoma Packtechnik GmbH, Achern, Fed. Rep. of Germany

Filed Jun. 3, 1983, Ser. No. 500,673

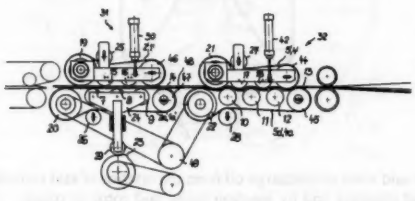
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220892

Int. Cl.³ B26F *3/02*

U.S. Cl. 493—234 **8 Claims**

1. In a paper making machine of the type operative to produce an elongated paper tube consisting of a plurality of successive paper tube sections which are demarcated from one another by perforations in said tube, said machine including a forward pulling station for transporting said paper tube out of

said machine and further including a separating station for separating said paper tube sections from one another at said perforations, the improvement wherein said forward pulling station comprises first endless conveyor belt means located above said elongated paper tube and second endless conveyor belt means located below said elongated paper tube, a first plurality of rollers in engagement with portions of said first conveyor belt means for urging said portions of said first conveyor belt means toward one side of said tube, a second plurality of rollers in engagement with portions of said second conveyor belt means for urging said portions of said second conveyor belt means toward the other side of said tube, the rollers in said first plurality of rollers being displaced, in the direction of movement of said paper tube, from the rollers in said second plurality of rollers whereby said paper tube follows a serpentine path of movement and it travels between said first and second endless conveyor belt means, said separating station being located downstream of said forward pulling station and comprising third and fourth endless conveyor belt means located above and below said elongated paper tube respectively, third and fourth pluralities of rollers in engagement with portions of said third and fourth conveyor belt means respectively, the rollers in said third plurality of rollers being displaced, in the direction of movement of said paper tube, from the rollers in said fourth plurality of rollers, and drive means coupled to the conveyor belt means in said forward pulling station and in said separating station, said drive means being operative to cause the conveyor belt means in said separating station to move at a greater transport speed than the conveyor belt means in said forward pulling station.

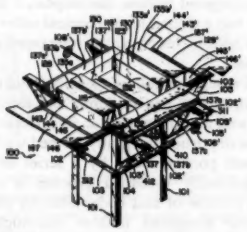


4,498,895

FOLDING PALLET JIG

Herbert V. White, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Feb. 8, 1983, Ser. No. 464,830
Int. Cl.³ B21B *1/21*
U.S. Cl. 493—476 **6 Claims**



1. An apparatus for erecting paperboard pallets from paperboard sheets comprising

a first pair and a second pair of spacers about which paperboard may be folded in forming a pallet,

said spacer pairs positioned in opposed spaced relation and defining a cavity-forming recess by the space therebetween which may be utilized to form a cavity in a pallet erected thereon,

each of said first and second pairs of spacers comprising an inner spacer adjacent to and defining limits of the cavity-forming recess therebetween, and an outer spacer having a horizontal planar surface which in combination with a horizontal planar surface of said inner spacer defines a land-forming portion about which paperboard may be folded in forming a pallet,

means for moving said inner spacer of said first spacer pair and said inner spacer of said second spacer pair toward or away from each other to vary the size of the cavity-forming recess defined therebetween,

means for moving said outer spacer of said first spacer pair and said outer spacer of said second spacer pair toward or away from each other to vary the size of the land-forming portion defined by the horizontal planar surfaces of said inner spacers and said outer spacers,

each of said outer spacers having an end-plate portion hingedly connected thereto for pivotal movement about the hinged connection toward said outer spacer to which said end-plate is hingedly connected,

sidewall-forming plates positioned in opposed spaced relation adjacent to said first and second pairs of spacers, with said first and second pairs of spacers extending therebetween,

each of said sidewall-forming plates being hingedly supported for pivotal movement toward said first and second pairs of spacers positioned therebetween for folding paperboard in forming a pallet, and

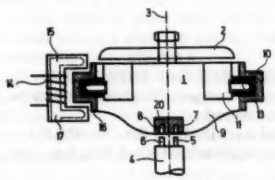
means for moving said sidewall-forming plates toward or away from each other in a direction transverse to the movement of said pairs of spacers positioned therebetween.

4,498,896

HEATABLE CENTRIFUGE

Hans Leis, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm, Munich, Fed. Rep. of Germany

Filed Oct. 21, 1975, Ser. No. 624,263
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1974, 2450482
Int. Cl.³ B04B *15/02, 15/08*
U.S. Cl. 494—14 **16 Claims**



1. A heatable centrifuge comprising a rotor including a first portion and a second portion, said first portion having a central axis about which said first and second portions are rotatable, said first portion extends transversely of the central axis, said second portion is annular in shape and is secured to said first portion radially outwardly from and concentric to the central axis, said first portion being formed of an electrically insulating and heat insulating material, said second portion being formed of a high strength electrically conductive material, and means arranged for supplying heat energy to said second portion from a location exteriorly of said rotor.

4,498,897

CENTRIFUGE WITH A SELF-EMPTYING DRUM

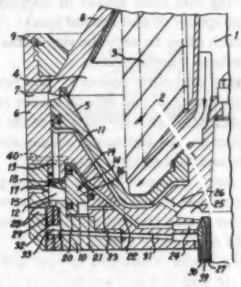
Hilbert Günnewig, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 546,126

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1982, 3240093

Int. Cl.³ B04B *11/02*

U.S. Cl. 494—27 8 Claims



1. In a centrifuge having a self-emptying drum with ejection openings which are opened and closed by a piston valve movable in a response to pressure from closure fluid in a closure compartment having outlet channels therearound which are opened and closed by a hydraulically controlled valve body having control compartments and a first compartment fluid-tightly separated from the control compartments and into which the outlet channels communicate when opened by the valve body, the first compartment having choked outlets and configured to accommodate a part of the closure fluid from the closure compartment, the improvement comprising: means forming at least one run-off channel in fluid communication with the first compartment and fluid actuated valve means for blocking and unblocking the run-off channel to effect the complete emptying when the run-off channel is unblocked.

4,498,898

CENTRIFUGAL SEPARATOR

Mervyn T. Haggett, Langport, England, assignor to AE PLC, Warwickshire, England

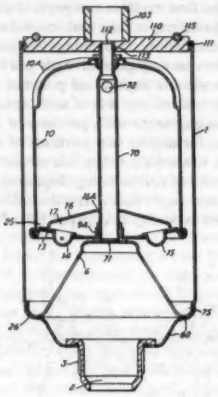
Filed Apr. 18, 1983, Ser. No. 485,651

Claims priority, application United Kingdom, Apr. 16, 1982, 8211100

Int. Cl.³ B04B *9/06*

U.S. Cl. 494—49 8 Claims

1. A centrifugal oil cleaner assembly adapted to be mounted on a support at its upper end and to depend from the support, the assembly comprising a housing member having a bottom portion defining an outlet and sidewalls extending upwardly therefrom to define an open upper end, closure means on said support sealingly engageable with said open upper end of said housing member to form a chamber, a substantially vertical shaft mounted in said chamber, a rotor journaled on said shaft within said chamber and having an interior chamber, said shaft serving to releasably secure said housing member to said support and to carry the weight of said housing member and said rotor, means for supplying oil to be cleaned under pressure through said shaft to the interior of said rotor, said means including a passageway in the upper end of said shaft, and jets



on said rotor to discharge oil from the interior of said rotor into said chamber and by reaction cause said rotor to rotate.

4,498,899

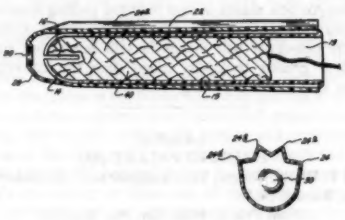
TAMPON APPLICATOR

Richard A. Gross, Richmond, Va., assignor to Ethyl Molded Products Company, Richmond, Va.

Continuation of Ser. No. 365,830, Apr. 5, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 626,582

Int. Cl.³ A61F *15/00*

U.S. Cl. 604—16 9 Claims



1. A tampon applicator comprising:

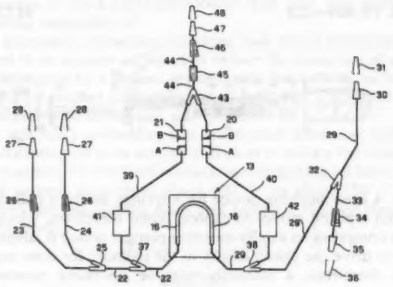
(A) a first elongated hollow thermoplastic tube having an open end and a slotted hemispherical other end, said first elongated hollow thermoplastic tube being receivable of a tampon; and

(B) a second elongated hollow thermoplastic tube having an opening at its rear end to admit said first tube, a hemispherical wall at its front end, an imperforate body having a curved wall portion integrally formed with an accordian pleated wall portion made by a series of flexible, preformed, generally V-shaped grooves in a longitudinal extending portion of said body whereby the diameter of said second elongated hollow thermoplastic tube is changeable from a first diameter to a second diameter, said first diameter being sufficiently large to allow said second elongated hollow thermoplastic tube to receive within its interior said first elongated hollow thermoplastic tube, and said second diameter being sufficiently small to allow said second elongated hollow thermoplastic tube to be received in the interior of said first elongated hollow thermoplastic tube.

4,498,900
METHOD FOR THE AUTOMATIC SEMICONTINUOUS PERITONEAL DIALYSIS

Vincenzo Buoncristiani, Via Marco Polo, 4, Foligno, Italy

Division of Ser. No. 200,425, Oct. 24, 1980, Pat. No. 4,381,003. This application Dec. 21, 1982, Ser. No. 452,513
Claims priority, application Italy, Oct. 26, 1979, 43514 A/79
Int. Cl.³ A61M 5/00
U.S. Cl. 604—28 8 Claims

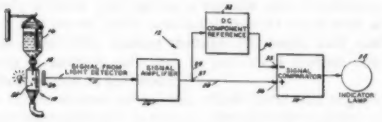


1. A method for automatic semicontinuous peritoneal dialysis of a patient in need of such dialysis, wherein dialysing solution is introduced into the peritoneal cavity of the patient and then discharged therefrom, comprising forming a closed circuit between said peritoneal cavity and a supply of dialysing solution, said supply of dialysing solution being a predetermined amount of solution; transferring the dialysing solution from said supply, in an amount predetermined consistently with the patient undergoing the treatment, to the peritoneal cavity of the patient in unchanged form from that in said supply; transferring at least a portion of said dialysing solution back from said cavity to said supply in unchanged form from that in which it is withdrawn from said cavity; and sequentially repeating said transfer of the dialysing solution to and from the said peritoneal cavity for a predetermined number of cycles, while maintaining the dialysing solution at a desired temperature.

4,498,901
INTRAVENOUS MONITORING SYSTEM UTILIZING A DYNAMIC REFERENCE THRESHOLD

Dale E. Finch, McHenry, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 30, 1982, Ser. No. 403,383
Int. Cl.³ A61M 5/16
U.S. Cl. 604—65 16 Claims



1. An intravenous monitoring system for an intravenous feeding apparatus having a drip chamber through which the liquid to be administered to the patient passes, comprising:

a signal voltage generating means having an output terminal and adapted to be connected to the drip chamber which generates a detecting signal voltage in response to liquid passing through said drip chamber;

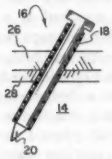
a comparator means having a first input connection coupled to said output terminal of said signal voltage generating means, a second input connection and an output connection which generates an output signal voltage when a signal voltage at one of the input connections exceeds the signal voltage at the other input connection;

a D.C. component reference circuit that generates a dynamic reference threshold voltage, said D.C. component reference circuit comprises a signal voltage reduction means that is coupled between said second input connection of said comparator means and said output terminal of said signal voltage generating means, said signal voltage reduction means reduces said detecting signal voltage thus outputting a reduced output signal voltage that is less than said dynamic reference threshold voltage, and an RC circuit coupled between said signal reduction means and said second input connection of said comparator means, wherein said RC circuit stores and emits a residual signal voltage, that is also less than said dynamic reference threshold voltage, to said comparator means whenever said detecting signal voltage changes in response to liquid passing through the drip chamber, whereby when said detecting signal voltage changes in response to liquid passing through the drip chamber said dynamic reference threshold voltage exceeds said detecting signal voltage and said comparator means generates said output signal voltage in response thereto.

4,498,902
CATHETER GUIDE

Stephen R. Ash, Lafayette; Gordon C. Wolf, Rossville, and Richard Bloch, Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation of Ser. No. 321,128, Nov. 13, 1982, abandoned, which is a continuation of Ser. No. 92,031, Nov. 7, 1979, abandoned. This application Feb. 23, 1983, Ser. No. 469,096
Int. Cl.³ A61B 17/34; A61M 25/00
U.S. Cl. 604—164 4 Claims



1. A catheter placement unit having a trocar with a substantially cylidrical sheath, the improvement comprising:

guide means having an exterior surface and an interior surface which define a guide wall therebetween with said guide wall having a normally curved cross-sectional area of preselected diameter; and

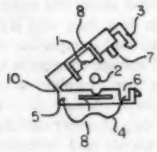
said guide means having an opening of adjustable dimensions extendable throughout the entire length thereof, said guide means being semi-rigid such that, when compressive forces are applied to the said exterior surface of said guide means the guide wall is coiled so that the diameter of said guide wall is reduced, but when said compressive forces are removed, said guide wall tends to return to its said normal diameter, with said guide means being readily deformable to allow adjustment of said diameter of said guide means with said guide means being rolled into an adjusted diameter to facilitate utilization placement and movement of said guide means relative to said sheath of said trocar, and said opening of adjustable dimensions allowing said guide means to receive a catheter of a material suitable for causing said deformation of said guide means so that said catheter may be inserted through said opening exterior of a patient, and so that said guide means may be withdrawn from a patient without disturbing the positioning and integrity of said catheter.

4,498,903

INTERORAL TUBE FIXING DEVICE

Christina C. Mathew, 1600 Hagy's Ford Rd. 2-0, Narberth, Pa. 19072

Filed Dec. 21, 1982, Ser. No. 437,614
Int. Cl.³ A61M 16/00
U.S. Cl. 604—174 3 Claims



1. An interoral tube securing device having:
(a) a body having a passage therethrough, said passage being sized to securely hold said tube;
(b) a flexible cord attached at a first end to said body, adapted to pass through gaps between human teeth; and
(c) attachment means on said body for capture of and securing to a second end of said cord;
wherein said body has a first portion having a semicircular passage, said first portion attached to a second portion of said body and rotatable with respect thereto so as to bring the semicircular passage in said first portion in juxtaposition with a semicircular passage in said second portion thereby creating a passage adapted to secure a tube passed through said passage, and said second portion has a slot therethrough, and said first portion has a block adapted to mate with said slot thereby securing an end of said cord.

4,498,904

DOSE METERING PLUNGER DEVICES FOR USE WITH SYRINGES

Robert C. Turner, 13 Belbroughton Rd., Oxford; Anthony B. Stone, 32 The Green, Charlbury, Oxford, and Rury R. Holman, 42 Meadow Close, Farmoor, Oxford, all of England

PCT No. PCT/GB82/00034, § 371 Date Oct. 12, 1982, § 102(e) Date Oct. 12, 1982, PCT Pub. No. WO82/02662, PCT Pub. Date Aug. 19, 1982
PCT Filed Feb. 12, 1982, Ser. No. 438,872
Int. Cl.³ A61M 5/00
U.S. Cl. 604—211 44 Claims

1. A dose metering device for a syringe having a cylinder in which a piston moves to express liquid therefrom, which device comprises an axially-movable plunger which is adapted in use to drive the piston axially in the cylinder for dose expression therefrom, a manually-rotatable operating member, a rotary screw mechanism operatively associated with the plunger, a unidirectional coupling by which the operating member is operatively coupled to the rotary screw mechanism, angular rotation of the operating member in one direction (referred to as the forward direction) being transmitted by the unidirectional coupling to the rotary screw mechanism which is arranged to convert said transmitted rotation into corresponding axial movement of the plunger, whereby in use successive rotary operating strokes of the operating member in the said forward direction are converted into successive axial movement steps of the plunger to express successive doses from the syringe whose volumes correspond to the angular extents of the respective operating strokes of the operating member, and stop means arranged to limit each of the said operating strokes of the operating member at the same predetermined angular finishing point, the unidirectional coupling permitting the manual angular retraction of the op rating member independently of the plunger after each said o,erating stroke from its finishing point predetermined by the stop means to a selected angular position constituting a variable starting point for the next operating stroke, and scale means arranged to indicate selectable angular positions of a plurality of said starting points, whereby the volume of each dose to be expressed is variably preset in use by selection of the angular position, as indicated by the scale means, of the starting point of the respective operating stroke of the operating member.

4,498,905

METHOD FOR DEACTIVATING AND CONTROLLING THE DUSTING TENDENCIES OF DRIED PARTICULATE LOWER RANK COAL

James L. Skinner, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 547,517, Oct. 31, 1983,. This application Aug. 31, 1984, Ser. No. 646,181
Int. Cl.[3] C10L *1/00, 5/04, 5/24, 5/32*
U.S. Cl. 44—1 C 10 Claims

1. A method for deactivating and controlling the dusting tendencies of dried particulate lower rank coal, said method consisting essentially of:

(a) intimately contacting said dried coal with a deactivating oil in an amount sufficient to reduce the reactivity of said dried coal by a desired amount, said deactivating oil having a 5 percent point in excess of about 900° F. to produce deactivated dried coal; and thereafter

(b) intimately contacting said deactivated dried coal with a dedusting oil in an amount sufficient to reduce the dusting tendency by a desired amount, said dedusting oil having a 5 percent point from about 400° F. to about 750° F. to produce deactivated dried coal having a reduced dusting tendency.

4,498,906

COAL-WATER FUEL SLURRIES AND PROCESS FOR MAKING

Robert S. Scheffee, Lorton, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Continuation-in-part of Ser. No. 360,523, Mar. 22, 1982, Pat. No. 4,465,495, which is a continuation-in-part of Ser. No. 197,853, Oct. 17, 1980, abandoned. This application Apr. 16, 1982, Ser. No. 368,921
Int. Cl.[3] C10L *1/32*
U.S. Cl. 44—51 68 Claims

1. A coal-water fuel slurry which comprises:

a. finely-divided coal having a particle size distribution such that about 100% passes through 50 mesh with at least about 50% passing through 200 mesh, said coal being in amount sufficient to provide a desired coal concentration in the slurry;

b. a minor amount of anionic alkali metal salt organic dispersant sufficient to reduce substantially viscosity of the slurry;

c. a minor amount of anionic alkaline earth metal salt organic dispersant sufficient to produce a slurry yield point larger than that obtained with said alkali metal salt alone and to maintain the slurry in substantially stable static dispersion; and

d. water in amount sufficient to provide the liquid carrier for the slurry.

21. Process for making stable coal-water fuel slurry, which comprises:

a. admixing:

(i) finely-divided coal having a particle size distribution such that about 100% passes through 50 mesh with at least about 50% passing through 200 mesh, said coal being in amount sufficient to provide a desired coal concentration in the slurry;

(ii) a minor amount of anionic alkali metal salt organic dispersant sufficient to reduce substantially viscosity of the slurry;

(iii) a minor amount of anionic alkaline earth metal salt organic dispersant sufficient to produce a slurry yield point larger than that obtained with said alkali metal dispersant alone and to maintain the slurry in substantially stable static dispersion; and

(iv) water in amount sufficient to provide the liquid carrier for the slurry, and

b. subjecting the mixture to high shear mixing at a shear rate of at least about 100 sec^{-1}.

41. Process for converting a coal-water pipeline slurry into a substantially stable fuel slurry, wherein the pipeline slurry contains particles of excessive size for efficient combustion, which comprises:

a. partially dewatering or adding finely-divided coal in an amount sufficient to increase the coal content in the pipeline slurry to a concentration desired in the fuel slurry, if the coal concentration in the aqueous pipeline slurry is less than that desired in the fuel slurry;

b. passing said slurry through a comminuting means to reduce excessively sized coal particles to sizes sufficiently small for combustion in a combustion chamber and to produce a particle size distribution such that about 100% passes through 50 mesh with at least about 50% passing through 200 mesh;

c. adding to the slurry a minor amount of:

(i) anionic alkali metal salt organic dispersant sufficient to reduce substantially viscosity of the slurry, and

(ii) alkaline earth metal salt organic dispersant sufficient to produce a slurry yield point larger than that produced with said alkali metal dispersant alone and to maintain the slurry in substantially stable static dispersion; and

d. subjecting the mixture comprising said coal, said alkali metal and alkaline earth metal dispersants and water to high shear mixing at a shear rate of at least about 100 sec^{-1}.

4,498,907

PROCESS FOR UPGRADING CUTS OF VERY HIGH CYCLOPARAFFINS CONTENT

Bernard Juguin, Rueil Malmaison; Germain Martino, Poissy, and Jean Miquel, Paris, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jun. 30, 1982, Ser. No. 393,913
Claims priority, application France, Jun. 30, 1981, 81 13001
Int. Cl.[3] C10L *1/02*
U.S. Cl. 44—56 6 Claims

1. A process for upgrading a naphtha cut distilling between about 25° and 230° C. and comprising at least 70% by weight of naphthenic hydrocarbons, said cut being recovered from heavy petroleum products or from fractionation of oils obtained by liquefaction of coal with hydrogen, said cut containing at least 1000 ppm by weight as sulfur of sulfur compounds, at least 1000 ppm by weight as nitrogen of nitrogen compounds and at least 1000 ppm by weight as oxygen of oxygen compounds, said process comprising the steps of:

(a) subjecting said cut to a moderate hydrotreatment under such conditions that the resultant effluent contains about 60–500 ppm by weight as sulfur of sulfur compounds, about 40–100 ppm by weight as nitrogen of nitrogen compounds and about 500–1500 ppm by weight as oxygen of oxygen compounds; and

(b) conveying the effluent from step (a) directly to a dehydrogenation zone and contacting said effluent in said zone with a neutral or weakly acidic supported dehydrogenation catalyst whose neutralization heat by ammonia absorption is less than about 40 joules per gram at 300 mm Hg, said contacting being effected under such conditions that the resultant liquid effluent contains at least 75% by weight of aromatic hydrocarbons;

whereby said resultant effluent has a higher octane number than said naphtha cut and is suitable for use as a motor-grade gasoline and as a constituent of a blended fuel composition.

4,498,908

LIQUID FUEL COMPOSITION CONTAINING REACTION PRODUCT OF TETRAHYDROPYRIMIDINES

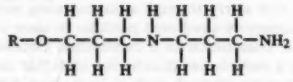
Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 3, 1984, Ser. No. 606,562
Int. Cl.[3] C10L *1/22*
U.S. Cl. 44—71 11 Claims

1. A fuel composition containing a major portion of a liquid

fuel and between about 1 and about 200 pounds of additive per 1000 barrels of liquid fuel, said additive having been prepared by:

(a) reacting a diamine or mixture of diamines generally having the structural formula:



wherein R is 1 to 70 carbon atoms in length, with a monocarboxylic or dicarboxylic acid, in a mole ratio of diamine to acid of between about 1:1 and about 1:2 at a temperature of about 100° to about 300° C.; and thereby obtaining a tetrahydropyrimidine reaction product; and

(b) reacting the tetrahydropyrimidine reaction product of (a) with an inorganic base, in a mole ratio of base to acid at between about 1:1 and about 5:1 at a temperature of about 175° to about 350° C. thereby obtaining said additive.

4,498,909

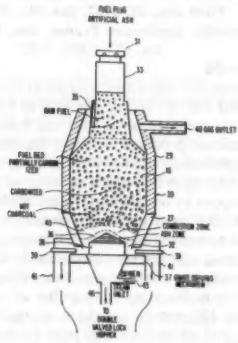
PROCESS FOR THE GASIFICATION OF FUELS

Geoffrey Milner, Stockton-on-Tees, England; Michael F. Butler, Lakeland, and Robert A. Ashworth, St. Petersburg, both of Fla., assignors to DM International, Inc., Houston, Tex.

Filed Nov. 2, 1982, Ser. No. 438,652

Int. Cl.³ C10J *3/02, 3/16, 3/42*

U.S. Cl. 48—209 **14 Claims**



1. A method of gasifying pieces of solid, low-ash biomass fuel in raw or partially carbonized form to provide gas relatively rich in carbon monoxide and hydrogen comprising charging said pieces of fuel together with a quantity of particulate, nonfusing refractory material into the upper portion of a gasification zone in which the lower portion comprises a partial combustion zone to form, on a supporting grate positioned below said partial combustion zone, a downwardly moving, compact bed of said refractory material and said pieces of fuel undergoing gasification; supplying an oxygen-containing, combustion-supporting gas to the lower portion of the bed to conduct said gasification and produce ash; said refractory material being charged in an amount sufficient to maintain on said grate a protective layer of said refractory material and ash produced by said combustion to provide a layer having an adequate depth or thickness to protect said grate from substantial deleterious effects due to said combustion; mechanically ashing said bed by moving said grate at a rate that maintains the downward movement of the pieces of fuel of the bed undergoing gasification and removes from said grate refractory charged to said bed and said formed ash at a rate sufficient to prevent their excessive accumulation on said gate; and removing from said bed product gases relatively rich in carbon monoxide and hydrogen.

4,498,910

SAFE ADSORPTION PROCESS FOR THE SEPARATION OF HYDROCARBONS FROM OXYGEN CONTAINING GAS

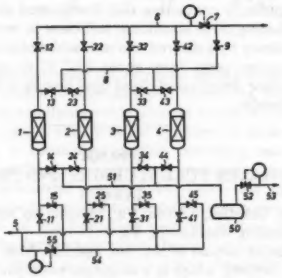
Christian Benkmann, Gräfelfing, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden and Chemische Werke Huels Aktiengesellschaft, Marl, both of, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,596

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150137

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—18 **21 Claims**



1. A pressure swing adsorption process conducted in a plurality of cyclically interchangeable adsorbers, for recovering a hydrocarbon from a gaseous feed stream containing hydrocarbons and a minor amount of oxygen, comprising the steps in a cycle of:

(a) selectively adsorbing the hydrocarbon to be recovered during an adsorption phase conducted under elevated pressure;

(b) during the adsorption phase and during at least one cocurrent expansion phase following the adsorption phase, withdrawing a residual gaseous stream, at the outlet end of an adsorber, which stream is depleted in the hydrocarbon to be recovered and enriched in oxygen;

(c) during a subsequent countercurrent expansion phase of desorption, withdrawing a stream enriched in the desorbed hydrocarbon to be recovered from the inlet end of the adsorber; and

(d) after the desorption in step (c), conducting a pressure buildup phase by repressurizing the adsorber to the adsorption pressure with the gaseous feedstream or a gas free of oxygen so as to prevent the occurrence of localized concentrations of oxygen within the adsorber of above 90% of the explosive limits thereof, and then repeating the cycle.

21. A pressure swing adsorption process conducted in a plurality of cyclically interchangeable adsorbers, for recovering a hydrocarbon from a gaseous feed stream containing hydrocarbons and a minor amount of oxygen, comprising the steps in a cycle of:

(a) selectively adsorbing the hydrocarbon to be recovered during an adsorption phase conducted under elevated pressure;

(b) during the adsorption phase and during at least one cocurrent expansion phase following the adsorption phase, withdrawing a residual gaseous stream from an adsorber, which stream is depleted in the hydrocarbon to be recovered and enriched in oxygen;

(c) during a subsequent countercurrent expansion phase of desorption, withdrawing a stream enriched in the de-

sorbed hydrocarbon to be recovered from the adsorber; and

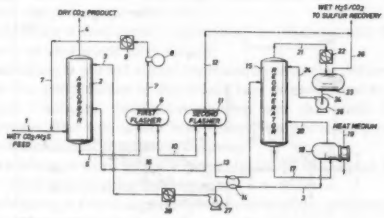
(d) after the desorption in step (c), conducting a pressure buildup phase by repressurizing the adsorber to the adsorption pressure with the gaseous feedstream or a gas free of oxygen so as to prevent the occurrence of localized concentrations of oxygen within the adsorber of above 90% of the explosive limits thereof, and then repeating the cycle.

4,498,911

SIMULTANEOUS REMOVAL OF WATER AND HYDROGEN SULFIDE FROM GASEOUS CARBON DIOXIDE

Carl H. Deal, and A. John Flynn, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 29, 1983, Ser. No. 508,778
Int. Cl.³ B01D *53/14*
U.S. Cl. 55—32 **10 Claims**



1. A process for simultaneously removing H_2S and H_2O from a gas stream containing between about 90 and about 99.5 percent volume CO_2 and between about 0.01 and about 5 percent volume H_2S, which process comprises:

(a) countercurrently contacting said gas stream at elevated pressure between about 1000 and 2000 psig in an absorption zone with a physical solvent selected from the group consisting of diethylene glycol, triethylene glycol, tetraethylene glycol and mixtures thereof, therein liberating a relatively dry CO_2-rich gas and a loaded H_2S-rich liquid absorbent solution;

(b) passing said loaded absorbent solution to a first flashing zone maintained at a pressure below the partial pressure of the CO_2 present in said loaded absorbent solution at a temperature present in said first flashing zone, therein liberating a gas stream comprising a major portion of relatively dry CO_2 and a minor portion of the H_2S present in said loaded absorbent solution, producing a semi-loaded absorbent absorbent solution, compressing and recycling said gas stream to said absorption zone;

(c) passing said semi-loaded absorbent solution to at least one additional flashing zone maintained at a pressure lower than that of the preceding flashing zone at the temperature in said flashing zone, therein liberating a gas stream comprising a major portion of the H_2S and a minor portion of the CO_2 present in said semi-loaded absorbent solution and producing a semi-lean absorbent solution; and

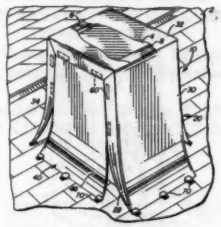
(d) passing said semi-lean absorbent solution to a regeneration zone, therein further separating H_2S, H_2O and CO_2 from said semi-lean absorbent solution, and returning the resulting lean absorbent solution to said absorption zone.

4,498,912

SUNSCREEN COVER APPARATUS FOR AN EVAPORATIVE COOLER

Theresia K. Wagner, 3110 N. 33rd St., Phoenix, Ariz. 85018

Filed Nov. 24, 1982, Ser. No. 444,318
Int. Cl.³ B01F *3/04*
U.S. Cl. 55—233 **5 Claims**



1. Cover apparatus for an evaporative cooler having a top and sides, comprising, in combination:

flexible, air pervious panel means draped over the top and the sides of the evaporative cooler, including

a refective top panel portion covering the top of the evaporative cooler, and

reflective side panel portions covering the sides of the evaporative cooler, said top and side panel portions reflecting radiant energy and allowing air to flow through the panel means to the evaporative cooler; and

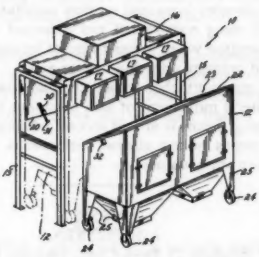
fastening means for securing the panel means to the cooler.

4,498,913

APPARATUS FOR FILTERING AIR FOR A POWDER SPRAY BOOTH

Gene F. Tank, Amherst; Samuel O. Dawson, Avon Lake, both of Ohio, and Phillip R. Barnett, Mishawaka, Ind., assignors to Nordson Corporation, Amherst, Ohio

Filed Oct. 6, 1983, Ser. No. 539,521
Int. Cl.³ B01D *46/00*; B05B *15/04*
U.S. Cl. 55—356 **2 Claims**



1. Apparatus for filtering air for a powder spray booth comprising,

a fan plenum,

vertical supports mounted on each side of said fan plenum to support said plenum above a floor,

said plenum having a lower edge which lies in a plane inclined at an angle to a horizontal plane,

a filter module,

wheels mounted on said filter module to support it on the floor,

said filter module having an upper edge lying in said inclined plane,

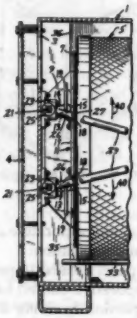
said edges being engageable when said filter module is rolled into position under said plenum.

4,498,914

FILTER APPARATUS INCLUDING APPARATUS FOR CLAMPING AN AIR FILTER ELEMENT IN A FILTER HOUSING

Donald J. Ericksen, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Mar. 3, 1983, Ser. No. 471,866
Int. Cl.³ B01D *46/24, 46/42*
U.S. Cl. 55—480 **10 Claims**



1. A filter apparatus comprising:

a filter housing having a filter element therein;

means, constructed and arranged to be rotatably mounted at one end of a filter element support structure in said housing, for applying pressure to said filter element contained within said support structure, said pressure applying means including portions coaxial with an axis about which said pressure applying means rotates and having portions offset from said axis, said support structure having a space formed therein for accepting said filter element and having a fixed surface, opposite the first mentioned end, against which said filter element is pressed by said pressure applying means;

clamping means movable between a first position in which said filter element is clamped in place against said fixed surface and a second position allowing removal of said filter element from said support structure, said clamping means being constructed and arranged to move to said first position when pressed against by said offset portions of said pressure applying means; and

support means attached to said clamping means for preventing lateral movement of said clamping means when said clamping means is in said second position, with said support means resting against said coaxial portions of said pressure applying means.

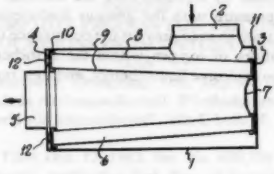
4,498,915

AIR FILTERS

Stanley P. Witchell, 17 Town Close, Vicarage Hill, Dartmouth, South Devon, England

Continuation-in-part of Ser. No. 558,496, Mar. 14, 1975, Pat. No. 4,200,444. This application Mar. 12, 1980, Ser. No. 129,786
Claims priority, application United Kingdom, Feb. 23, 1980, 8006177
Int. Cl.³ B01D *46/10*
U.S. Cl. 55—498 **3 Claims**

1. An air cleaner incorporating a generally tubular pleated paper filter element constructed in the form of a frustum of a cone with the pleats extending axially thereof, and the cone having an aspect ratio of 2 and an included angle of 4 degrees, said cleaner comprising a tubular casing having an opening in the tubular side wall towards one end thereof in communication with the relatively small diameter region of the element and an axial opening diameter substantially equal to the internal diameter of the relatively wide diameter end of the filter element, the casing having substantially the same internal diameter as the outside diameter of said wide diameter end of



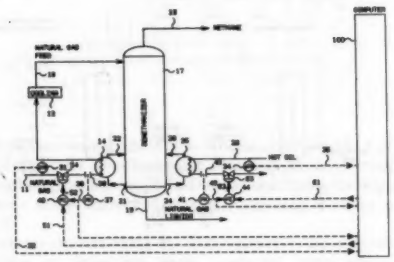
the filter element wherein the pleat depth is in the range of from 35 to 45% of the element outlet diameter.

4,498,916

CONTROL OF A FRACTIONAL DISTILLATION PROCESS

Bruce A. Jensen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 28, 1983, Ser. No. 508,638
Int. Cl.³ B01D *3/42*; F25J *3/02*
U.S. Cl. 62—21 **10 Claims**



1. Apparatus comprising:

a fractional distillation column;

means for supplying a heating fluid stream through a first control valve to said fractional distillation column;

means for supplying a waste heat stream through a second control valve to said fractional distillation column;

means for establishing a first signal representative of the actual flow rate of said waste heat stream;

means for establishing a second signal representative of the difference in the temperature of the waste heat stream provided to said fractional distillation column and the waste heat stream after said waste heat stream has provided heat to said fractional distillation column;

means for establishing a third signal representative of the actual flow rate of said heating fluid stream;

means for establishing a fourth signal representative of the difference in the temperature of the heating fluid provided to said fractional distillation column and the heating fluid after said heating fluid stream has provided heat to said fractional distillation column;

means for establishing a fifth signal representative of the total actual heat being provided to said fractional distillation column by said heating fluid stream and said waste heat stream in response to said first, second, third and fourth signals;

means for establishing a sixth signal representative of the total heat input required by said fractional distillation column;

means for comparing said fifth signal and said sixth signal and for establishing a seventh signal (C) which is responsive to the difference between said fifth and said sixth

signal, wherein said seventh signal is scaled so as to be representative of the percentage of the heat, which could be supplied to said fractional distillation column if said first control valve and said second control valve were fully open, required to maintain the actual total heat supplied to said fractional distillation column substantially equal to the total heat represented by said sixth signal;

means for establishing an eighth signal representative of a desired flow rate of said waste heat stream in response to said seventh signal;

means for manipulating said second control valve in response to said eighth signal;

means for establishing a ninth signal representative of the desired flow rate of said heating fluid stream in response to said seventh signal; and

means for manipulating said first control valve in response to said ninth signal, wherein the manipulation of said first control valve in response to said ninth signal and the manipulation of said second control valve in response to said eighth signal results in the total heat actually supplied to said fractional distillation column being substantially equal to the desired total heat represented by said sixth signal.

6. A method for controlling the heat supplied to a fractional distillation column, wherein a heating fluid stream is supplied through a first control valve to said fractional distillation column and a waste heat stream is supplied through a second control valve to said fractional distillation column, said method comprising the steps of:

establishing a first signal representative of the actual flow rate of said waste heat stream;

establishing a second signal representative of the difference in the temperature of the waste heat stream provided to said fractional distillation column and the waste heat stream after said waste heat stream has provided heat to said fractional distillation column;

establishing a third signal representative of the actual flow rate of said heating fluid stream;

establishing a fourth signal representative of the difference in the temperature of the heating fluid provided to said fractional distillation column and the heating fluid after said heating fluid stream has provided heat to said fractional distillation column;

using computing means to establish a fifth signal representative of the total actual heat being provided to said fractional distillation column by said heating fluid stream and said waste heat stream in response to said first, second, third and fourth signals;

using computing means to establish a sixth signal representative of the total heat input required by said fractional distillation column;

using computing means to compare said fifth signal and said sixth signal and to establish a seventh signal (C) which is responsive to the difference between said fifth and said sixth signal, wherein said seventh signal is scaled so as to be representative of the percentage of the heat, which could be supplied to said fractional distillation column if said first control valve and said second control valve were fully open, required to maintain the actual total heat supplied to said fractional distillation column substantially equal to the total heat represented by said sixth signal;

using computing means to establish an eighth signal representative of a desired flow rate of said waste heat stream in response to said seventh signal;

manipulating said second control valve in response to said eighth signal;

using computing means to establish a ninth signal representative of the desired flow rate of said heating fluid stream in response to said seventh signal; and

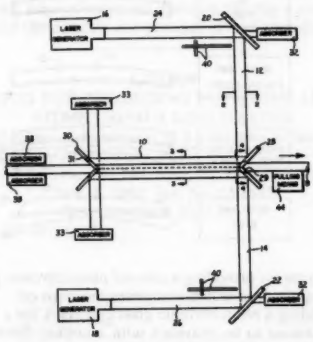
manipulating said first control valve in response to said ninth signal, wherein the manipulation of said first control valve in response to said ninth signal and the manipulation of said second control valve in response to said eighth signal results in the total heat actually supplied to said fractional distillation column being substantially equal to the desired total heat represented by said sixth signal.

4,498,917

METHOD AND APPARATUS FOR LASER SIZING OF OPTICAL FIBERS

Paul Weinstein, Orange, and Barry L. Kelmachter, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 26, 1983, Ser. No. 517,303
Int. Cl.³ C03B *37/10*; C03C *25/00*
U.S. Cl. 65—2 **18 Claims**



1. A method for sizing and machining a coated optical fiber having a buffer material surrounding a glass fiber to provide said optical fiber with a desired outer dimension, said method comprising:

forming a substantially cylindrical laser beam having a hollow central portion with a dimension substantially equal to said desired optical fiber outer dimension, said forming step comprising forming two substantially semi-cylindrical laser beams each having a hollowed-out core portion; and

passing said optical fiber through said hollowed-out core portions to vaporize with said laser beams oversized regions of said buffer material extending beyond said hollowed-out core portions into said laser beams.

4,498,918

METHOD FOR PRODUCING A GLASS ARTICLE

Thomas A. Seeman, 1152 Juliet, Toledo, Ohio 43614

Filed Jun. 8, 1983, Ser. No. 502,194
The portion of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ C03B *40/02*
U.S. Cl. 65—25.1 **2 Claims**

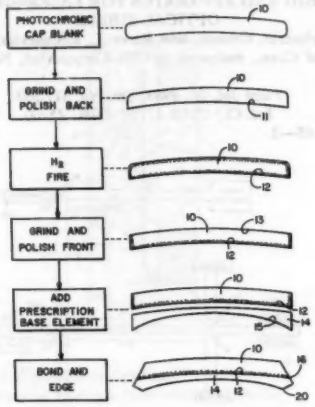
1. In a method for producing a glass article, which method includes the steps of lubricating the walls of a mold cavity by igniting a gas therein, introducing a gob into the mold cavity, and pressing the gob to a desired shape, the improvement wherein the gas is a mixture of a methyl acetylene/propadiene gas and a gas having an acetylenic triple bond, and the proportion of hydrocarbon having an acetylenic triple bond is controlled to one at which the flame which results from igniting the gas mixture is capable of penetrating an air lock in a deep mold cavity.

4,498,919

METHOD FOR MAKING COLORED PHOTOCHROMIC PRESCRIPTION OPHTHALMIC LENSES

George H. Mann, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 31, 1983, Ser. No. 547,108
Int. Cl.³ C03C 3/26, 21/00
U.S. Cl. 65—30.11 4 Claims



1. A process for providing a colored photochromic prescription ophthalmic lens which comprises the steps of:

(a) providing a photochromic glass cap blank for a thin lens cap element to be provided with a convex front surface and a concave back surface;

(b) finishing the back surface of the cap blank to a standard base curvature in the range of about 2 to 10 diopters to provide a semifinished cap blank with a concave back surface;

(c) subjecting the semifinished cap blank to a heat treatment in a reducing atmosphere to cause the reduction of selected metallic constituents therein and the formation of an integral colored layer on the surfaces of the blank;

(d) finishing the front surface of the cap blank to generate a front surface curvature matching the standard base curvature of the back surface, to remove front surface color, and to provide a finished cap element having a thickness not exceeding about 1.5 mm and having a convex front surface and a concave back surface;

(e) providing a glass base element for the lens, said base element having a convex front surface with a standard base curvature matching that of the back surface of the finished cap element, and having a prescription-finished back surface imparting selected elements of power, cylinder, multifocal and prism correction to the base element; and

(f) cementing the back surface of the colored cap element to the front surface of the base element such that the standard base curvatures mate, to provide a finished tinted prescription ophthalmic lens.

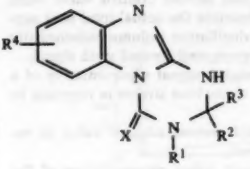
4,498,920

TETRAHYDROTRIAZINES FOR AQUATIC HERBICIDAL USE

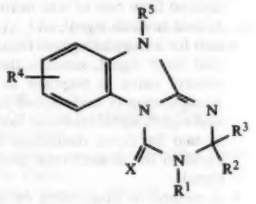
John F. Koerwer, Perkasie, Pa., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 28, 1979, Ser. No. 108,280
Int. Cl.³ A01N 43/64
U.S. Cl. 71—66 20 Claims

1. A method for the control of aquatic plant life which comprises applying to the aquatic plant life a composition comprising an inert carrier, and as an essential active ingredient, in a quantity toxic to aquatic plant life, a compound selected from the group consisting of compounds having the general formula:



&



wherein

R^1 is hydrogen, lower alkyl (C_1–C_6), cycloalkyl (C_3–C_7) lower alkenyl (C_2–C_6), lower alkynyl (C_3–C_6), haloalkyl (C_1–C_6) and alkoxyalkyl (C_2–C_6);

R^2 and R^3 individually are hydrogen, ketoalkyl (C_3–C_5), lower alkyl (C_1–C_6), cycloalkyl (C_3–C_6), alkoxyalkyl (C_2–C_4), alkenyl (C_2–C_6), haloalkyl (C_1–C_6), and acyl (C_2–C_4); R^2 and R^3 taken together can also form a spirocyclic ring of C_3–C_5 carbon atoms;

R^4 individually can be H, alkyl (C_1–C_6), a maximum of two halogens selected from the group consisting of Cl, F, and Br, alkoxyl (C_1–C_4), nitro, alkylthio (C_1–C_4) and alkylsulfonyl (C_1–C_4);

R^5 may be hydrogen, carbamoyl, N-alkylcarbamoyl (C_2–C_{14}), N-arylcarbamoyl, N-(substituted aryl)carbamoyl, N-haloalkylcarbamoyl (C_2–C_{12}), N-carboalkoxyalkylcarbamoyl, N-carboxyalkylcarbamoyl (C_3–C_{14}), N-alkoxyalkylcarbamoyl (C_3–C_{14}), N-arylsulfonylcarbamoyl, acyl(C_1–C_{14}), aroyl, substituted aroyl, alkoxycarbonyl (C_2–C_{14}), aryloxycarbonyl, hydroxyacyl (C_2–C_8) alkoxyacyl (C_3–C_9), alkylthioacyl (C_3–C_9), alkylsulfonylacyl (C_3–C_7), N,N-dialkylaminoacyl (C_4–C_{10}), alkylsulfonyl (C_1–C_{14}), haloalkylsulfonyl (C_1–C_{14}), arylsulfonyl, substituted arylsulfonyl, alkyl (C_1–C_{14}), hydroxyalkyl (C_1–C_8), alkoxyalkyl (C_2–C_9), haloalkyl (C_1–C_8), cycloalkyl (C_3–C_7), alkenyl (C_2–C_{14}), cycloalkenyl (C_5–C_7), alkynyl (C_2–C_{14}), aryl and substituted aryl;

X is oxygen or sulfur.

4,498,921

TRICHLOROISOCYANURIC ACID COMPOSITION

John A. Wojtowicz, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 458,378, Jan. 17, 1983, Pat. No. 4,472,187.
This application Sep. 29, 1983, Ser. No. 537,199
Int. Cl.³ E05B 67/38
U.S. Cl. 71—67 9 Claims

1. A method for sanitizing a water body which comprises:

(a) admixing dry trichlorocyanuric acid and a calcium or magnesium solubility promoting additive selected from the group consisting of the oxide, hydroxide, carbonate, and mixtures thereof of said calcium and magnesium to form a homogeneous dry mixture having a particle size in the range of about 40 to about 150 microns and having an additive/acid molar ratio of from about 0.3:1 to about 3:1, granulating said mixture to form homogeneous particles having a particle size in the range of between about 10 and about 100 mesh and further having a moisture content of less than about 0.2 percent by weight of said mixture; and

(b) feeding a sufficient portion of said mixture to said water body to produce available chlorine in situ whereby said water body is sanitized.

4,498,922

N-AMINOMETHYLHALOACETANILIDES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Karl Eicken; Wolfgang Rohr, both of Wachenheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

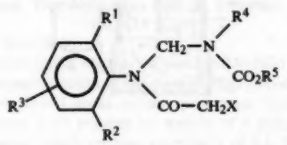
Filed Jul. 23, 1982, Ser. No. 401,355

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130302

Int. Cl.³ C07C *125/065*; A01N *37/22*

U.S. Cl. 71—111 **6 Claims**

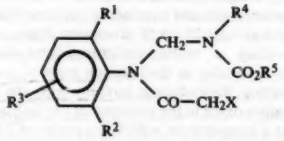
1. A substituted N-aminomethylhaloacetanilide of the formula



(I)

where R^1 and R^2 are each C_1–C_2-alkyl, R^3 is hydrogen or C_1–C_4-alkyl, R^4 is —CO—NH_2, R^5 is C_1–C_6-alkyl and X is halogen.

3. A herbicidal agent containing inert additives and an N-aminomethylhaloacetanilide of the formula



where R^1 and R^2 are each C_1–C_2-alkyl, R^3 is hydrogen or C_1–C_4-alkyl, R^4 is —CO—NH_2, R^5 is C_1–C_6-alkyl and X is halogen.

4,498,923

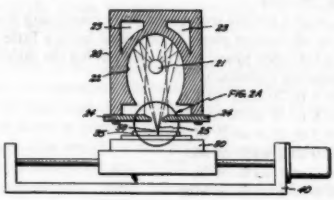
METHOD FOR PRODUCING EUTECTICS AS THIN FILMS USING A QUARTZ LAMP AS A HEAT SOURCE IN A LINE HEATER

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 245,764, Mar. 20, 1981,. This application Dec. 5, 1983, Ser. No. 557,996

Int. Cl.³ C22B *61/00*, *9/00*

U.S. Cl. 75—65 ZM **4 Claims**



1. A method for making eutectics as thin films comprising the steps of:

(a) depositing sequentially the components of the eutectic system at a purity level of at least 99.99% as overlying thin planar layers on at least a portion of a substrate, said substrate having top and bottom major opposed substantially parallel surfaces and an outer peripheral edge area interconnecting said major surfaces and being of a material which is substantially inert relative to said eutectic system, forming thereby a preform;

(b) creating a longitudinally extending molten zone of said components by impinging on said preform a beam of heat from a quartz lamp heat source within a line heater, said molten zone extending through said planar layers and being contiguous with at least a portion of said top major surface of said substrate; and

(c) moving said molten zone across at least a portion of said preform melting thereby the components of said eutectic alloy at the leading edge of said zone, mixing said components in said zone, and freezing said components at the trailing edge of said zone, forming thereby a eutectic thin film of the eutectic composition of said components.

4,498,924

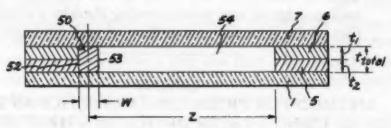
METHOD FOR PRODUCING EUTECTICS AS THIN FILMS USING A LINE HEATER

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 245,764, Mar. 20, 1981,. This application Dec. 5, 1983, Ser. No. 557,997

Int. Cl.³ C22B *9/00*, *61/00*

U.S. Cl. 75—65 ZM **13 Claims**



1. A method for making eutectics as thin films comprising the steps of:

(a) depositing sequentially the components of the eutectic system at a purity level of at least 99.99% as overlying thin planar layers on at least a portion of a substrate, said substrate having top and bottom major opposed substantially parallel surfaces and an outer peripheral edge area interconnecting said major surfaces and being of a material which is substantially inert relative to said eutectic system, forming thereby a preform;

(b) creating a longitudinally extending molten zone of said components, said molten zone extending through said planar layers and being contiguous with at least a portion of said top major surface of said substrate; and

(c) moving said molten zone across at least a portion of said preform melting thereby the components of said eutectic alloy at the leading edge of said zone, mixing said components in said zone, and freezing said components at the trailing edge of said zone, forming thereby a eutectic thin film of the eutectic composition of said components.

4,498,925

METHOD FOR PRODUCING EUTECTICS AS THIN FILMS USING AN ARC LAMP, AS A HEAT SOURCE IN A LINE HEATER

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1983, Ser. No. 557,998

Int. Cl.³ C22B *9/00*, *61/00*

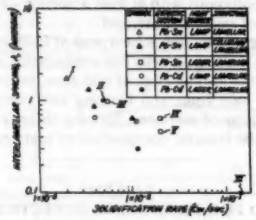
U.S. Cl. 75—65 ZM **5 Claims**

1. A method for making eutectics as thin films comprising the steps of:

(a) depositing sequentially the components of the eutectic system at a purity level of at least 99.99% as overlying thin

planar layers on at least a portion of a substrate, said substrate having top and bottom major opposed substantially parallel surfaces and an outer peripheral edge area interconnecting said major surfaces and being of a material which is substantially inert relative to said eutectic system, forming thereby a preform;

(b) creating a longitudinally extending molten zone of said components by impinging on said preform a beam of heat from a arc lamp heat source within a line heater, said



molten zone extending through said planar layers and being contiguous with at least a portion of said substrate; and

(c) moving said molten zone across at least a portion of said preform melting thereby the components of said eutectic alloy at the leading edge of said zone, mixing said components in said zone, and freezing said components at the trailing edge of said zone, forming thereby a eutectic thin film of the eutectic composition of said components.

4,498,926

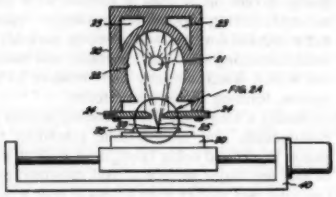
METHOD FOR PRODUCING EUTECTICS AS THIN FILMS USING A LASER DEVICE AS A HEAT SOURCE

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 245,764, Mar. 20, 1981,. This application Dec. 5, 1983, Ser. No. 557,999

Int. Cl.³ C22B *9/00, 61/00*

U.S. Cl. 75—65 ZM **4 Claims**



1. A method for making eutectics as thin films comprising the steps of:

(a) depositing sequentially the components of the eutectic system at a purity level of at least 99.99% as overlying thin planar layers on at least a portion of a substrate, said substrate having top and bottom major opposed substantially parallel surfaces and an outer peripheral edge area interconnecting said major surfaces and being of a material which is substantially inert relative to said eutectic system, forming thereby a preform;

(b) creating a longitudinally extending molten zone of said components by impinging on said preform a beam of heat from a laser device, said molten zone extending through said planar layers and being contiguous with at least a portion of said top major surface of said substrate; and

(c) moving said molten zone across at least a portion of said preform melting thereby the components of said eutectic alloy at the leading edge of said zone, mixing said components in said zone, and freezing said components at the trailing edge of said zone, forming thereby a eutectic thin film of the eutectic composition of said components.

4,498,927

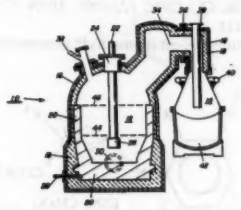
THERMAL REDUCTION PROCESS FOR PRODUCTION OF MAGNESIUM USING ALUMINUM SKIM AS A REDUCTANT

Kenneth A. Bowman, Leechburg, Pa.; Roy A. Christini, and Marlyn D. Ballain, both of Colville, Wash., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 10, 1983, Ser. No. 474,738

Int. Cl.³ C22B *26/22*

U.S. Cl. 75—67 R **31 Claims**



1. An improved process for the recovery of increased amounts of magnesium having low silicon contamination from a magnesium oxide containing ore, the process occurring in a system having a reaction zone and a condensation zone, the process comprising the steps of:

(a) charging to the reaction zone an ore containing 45 to 65% by weight calcium oxide and 25 to 60% by weight magnesium oxide and a reducing agent containing ferrosilicon and at least 25 wt.% aluminum skim;

(b) providing a molten calcium-silicon-aluminum-magnesium oxide slag in the reaction zone;

(c) contacting the reducing mixture with the slag or with magnesium oxide in the presence of the slag in the reaction zone at a temperature within the range of 1300° to 1700° C. and a pressure of between 35 and 100 torr to produce magnesium vapor;

(d) transporting the magnesium vapor from the reaction zone to the condensation zone; and

(e) condensing the magnesium vapor in the condensation zone.

4,498,928

DUCTILE DUPLEX IRON-BASED ALLOY CONTAINING ALUMINUM

Laurance L. Oden, Albany, and John S. Dunning, Corvallis, both of Oreg., assignors to The United States of America as represented by the Secretary of Interior, Washington, D.C.

Filed Feb. 6, 1984, Ser. No. 577,459

Int. Cl.³ C22C *38/40*

U.S. Cl. 75—124 **4 Claims**

1. A duplex ductile iron-based alloy containing aluminum in which an alpha-iron phase is provided having little Al and in which a beta-iron phase is provided having the majority of the Al, consisting essentially of:

about 8 to 20 wt% of Cr;
about 6 to 30 wt% of Ni;
about 3 to 11.5 wt% of Al;
about 0 to 2 wt% of Mo;
about 0 to 1 wt% of Si;
about 0 to 2 wt% of Mn;
about 0 to 0.1 wt% of C;
about 0 to 0.02 wt% of S;
about 0 to 0.02 wt% of P;
about 0 to 1 wt% of Ti;
about 0 to 2 wt% of Nb plus Ta; and

the balance of Fe;
and wherein the Ni/Al weight ratio is between 1.7 to 2.6.

4,498,929

STABLE DISPERSIONS OF POLYISOCYANATES CONTAINING POLYSILOXANE MOLD RELEASE AGENTS

John R. Robertson, Glenn Mills, Pa., assignor to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 486,269, Apr. 18, 1983, abandoned. This application Feb. 21, 1984, Ser. No. 582,019
Int. Cl.³ B28B 7/36
U.S. Cl. 106—38.2 22 Claims

1. A stable liquid organic polyisocyanate fluid dispersion for use in preparing reaction injected molded polyurethane resins having improved mold release properties having dispersed therein from 1–15 percent by weight of a polysiloxane mold release agent which consists essentially of 0.5–20 mol percent of $R_aR'_bSiO_{[4-(a+b)]/2}$ units and from 80–99.5 mol percent of $R''_cSiO_{(4-c)/2}$ units where R is an isocyanate reactive organic radical, a has an average value of from 1–3, R′ and R″ are both non-isocyanate reactive organic radicals, b has an average value of 0–2, a+b is from 1–3, and c has an average value of from 1–3, wherein

the ratio of the total molecular weight of said polysiloxane mold release agent to the total number of isocyanate reactive functional groups in said polysiloxane mold release agent ranges from 100–3500,

the combined formula weights of all isocyanate reactive organic radicals, R do not exceed 40% of the total molecular weight of said polysiloxane mold release agent,

the combined formula weights of all non-isocyanate reactive radicals, R′+R″ together do not exceed 40% of the total molecular weight of said polysiloxane mold release additive,

the combined formula weights of all the organic radicals R+R′+R″ in the molecule together do not exceed 60% of the total molecular weight of the molecule,

said polysiloxane mold release agent contains an average of at least two isocyanate reactive functional groups per molecule,

at least two of the isocyanate reactive functional groups in each molecule are located on separate organic radicals, R, attached independently to different silicon atoms in said polysiloxane,

said isocyanate reactive functional groups (R) are selected from the group consisting of alcohols, phenols, thiols, carboxylic acids, primary or secondary aromatic amines which contain no oxygen and which contain not more than one nitrogen atom attached directly to, in conjugation with, or incorporated within the aromatic ring nucleous, and secondary aliphatic amines wherein at least one of the alkyl carbon atoms bonded directly to the nitrogen atom is not a primary carbon atom,

the molecular weight of said polysiloxane mold release agent ranges from 1000 and 30,000, and

said polysiloxane mold release agent being substantially insoluble in said liquid polyisocyanate, and from 1–25 percent based on the weight of said polysiloxane mold release agent of a liquid silicone surfactant substantially free of isocyanate reactivity whereby said liquid remains substantially ungelled and fluid up to 25° C.

4,498,930

METHOD AND DEVICE FOR REGULATING THE BURNING PROCESS OF A CEMENT BURNING SYSTEM

Heinrich Rake, Aachen; Horst Herchenbach, Hennef; Gernot Jäger, Cologne, and Gerhard Franck, Aachen, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,555
Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220085
Int. Cl.³ C04B 7/44
U.S. Cl. 106—100 10 Claims

1. A method of regulating the roasting or burning process in a cement roasting or burning plant, in which a stream of material travels successively through a preheating zone, a calcining zone, a sintering zone and a cooling zone, wherein the regulation is carried out using the degree of deacidification of the material in a region of the calcining zone as a control condition.

4,498,931

PIGMENTED ALUMINUM OXIDE POWDER AND METHOD OF PRODUCING THE SAME

Hidekimi Kadokura, and Hiroshi Umezaki, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 30, 1983, Ser. No. 509,808
Claims priority, application Japan, Jul. 9, 1982, 57-120351
Int. Cl.³ C04B 31/02; C08K 3/04; C09C 1/44
U.S. Cl. 106—307 10 Claims

1. Pigmented aluminum oxide powder obtained by adding to aluminum oxide powder, more than 0.5 weight % of carbon black having a mean particle size less than 100 nm and a specific surface area more than 30 m^2/g, and mixing them under the condition of an impact value more than 1 G.

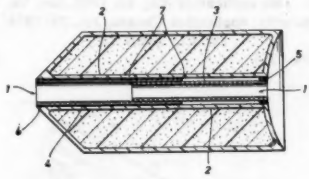
3. A method of producing pigmented aluminum oxide powder characterized by adding to aluminum oxide powder, more than 0.5 weight % of carbon black having a mean particle size less than 100 nm and a specific surface area more than 30 m^2/g, and mixing them under the condition of an impact value more than 1 G.

4,498,932

PIPELINE PIG WITH RESTRICTED FLUID BYPASS

Vitold R. Kruka, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 14, 1983, Ser. No. 561,497
Int. Cl.³ B08B 9/04
U.S. Cl. 134—8 13 Claims



12. A method for cleaning a pipeline comprising:

inserting a pig into the pipeline, said pig being a compressible polymeric cylindrical body having a restricted fluid bypass channel therethrough;

applying fluid pressure to the pig to force the pig through the pipeline;

passing a limited amount of fluid through the restricted fluid bypass channel; and

allowing the pig to axially compress by forming the bypass channel with two tubes respectively bonded to the cylindrical body at opposite ends thereof, each tube having a

free end positioned within the channel, with one tube being partially inserted into the other tube.

4,498,933

DIPHASE DRAIN CLEANER WITH HALOGENATED ALIPHATIC SOLVENT

Bernard Berkeley, Evanston, Ill., assignor to Hysan Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 374,450, May 3, 1982, Pat. No. 4,453,983. This application Mar. 15, 1984, Ser. No. 589,953

The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.

Int. Cl.³ B08B *3/08, 9/02*

U.S. Cl. 134—22.14 **21 Claims**

18. A method for cleaning from a drain a blockage containing polystyrene and one or more organic and inorganic substances and covered by water prevented from draining through the blockage, said method comprising the steps of:

providing a two phase composition consisting essentially of at least 50% by weight of an aqueous solution of sulfuric acid of at least 20% concentration, as a heavier phase, and up to 50% by weight of a lighter phase consisting essentially of a polystyrene solvent, with the lighter phase floating atop the heavier phase and being immiscible therewith, said polystyrene solvent being one which is substantially unaffected by said sulfuric acid;

adding said two phase composition to said blocked drain;

contacting the blockage and the water in the blocked drain initially with said heavier sulfuric acid while maintaining the lighter phase containing said polystyrene solvent above the blockage and above the sulfuric acid;

melting or dissolving said organic and inorganic substances in said blockage as a result of said sulfuric acid contacting said blockage;

releasing said polystyrene from said blockage, as a result of said melting or dissolving of the other substances in the blockage, thereby causing the polystyrene to float upwardly into said lighter phase located above the sulfuric acid;

and then dissolving the polystyrene which has floated upwardly in said lighter phase.

4,498,934

MACHINE AND METHOD FOR CLEANING RECEPTACLES IN A SINGLE IMMERSION CHAMBER HAVING A SOAKING STATION AND A SCRUBBING STATION

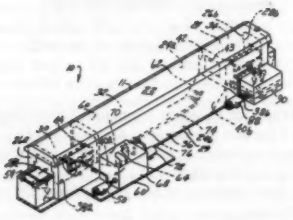
Roger F. Potts, Georgetown, Canada, assignor to Convay Systems Limited, Canada

Continuation-in-part of Ser. No. 147,622, May 7, 1980, Pat. No. 4,344,448, and a continuation-in-part of Ser. No. 360,872, Mar. 22, 1982,. This application Aug. 16, 1982, Ser. No. 408,365

Claims priority, application Canada, Jul. 31, 1979, 332924

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—254 **30 Claims**



14. An apparatus for removing dirt from dirty objects using cleaning fluid and rinsing fluid, said apparatus comprising:

a first spray tunnel;

at least one first spray nozzle in said first spray tunnel for mechanically scrubbing dirty objects with cleaning fluid as said dirty object passes through said first spray tunnel;

a first fluid supply means supplying pressurized cleaning fluid to said at least one first spray nozzle of said first spray tunnel;

a longitudinally extending immersion chamber having two ends, said longitudinally extending immersion chamber being interconnected at one of said two ends with said first spray tunnel and having the other of said two ends disposed remote therefrom, said longitudinally extending immersion chamber containing cleaning fluid for immersing said dirty objects therein as said dirty objects move through said longitudinally extending immersion chamber;

turbulator means in a location along said immersion chamber remote from said first spray tunnel;

at least one second spray nozzle on said turbulator means for turbulating said cleaning fluid in a portion of said immersion chamber spaced a predetermined distance from said one of said two ends of said longitudinally extending immersion chamber such as to turbulate said cleaning fluid in said portion of said immersion chamber;

second fluid supply means supplying pressurized cleaning fluid to said at least one second spray nozzle of said turbulator means;

a second spray tunnel interconnected with said other of said two ends of said longitudinally extending immersion chamber;

at least one third spray nozzle in said second spray tunnel for scrubbing said dirty objects with rinsing fluid as said dirty objects pass through said second spray tunnel;

a third fluid supply means supplying pressurized rinsing fluid to said at least one third spray nozzle of said second spray tunnel; and

transporting means for moving said dirty objects serially through said first spray tunnel, said longitudinally extending immersion chamber, and said second spray tunnel.

25. A method of removing the dirt from a dirty object using cleaning fluid and rinsing fluid, said method comprising the steps of:

spraying said dirty object with cleaning fluid from a first high pressure spray means so as to remove a first portion of said dirty from said dirty object;

immersing said dirty object in a first portion of an immersion chamber containing cleaning fluid, so as to loosen a second portion of said dirt from said dirty object by the action of said cleaning fluid;

immersing said dirty object in a second portion of said immersion chamber containing cleaning fluid;

turbulating said cleaning fluid using a second high pressure spray means in a second portion of said immersion chamber so as to remove said second portion of said dirt which has been loosened by the action of said cleaning fluid and so as to loosen and remove a third portion of said dirt by the mechanical action of said turbulated cleaning fluid;

rinsing said dirty object with rinsing fluid from a third high pressure spray means so as to remove the remaining dirt from said dirty object and to remove any cleaning fluid adhering to said dirty object; and

transporting said dirty objects progressively through said first high pressure spray means, said first portion of said immersion chamber, said second portion of said immersion chamber, and said third high pressure spray means.

4,498,935

ZINC PHOSPHATE CONVERSION COATING COMPOSITION

Gary D. Kent, Sterling Heights; Norbert B. Intorp, Farmington Hills, and Thomas H. Springstead, Pontiac, all of Mich., assignors to Parker Chemical Company, Madison Heights, Mich.

Filed Jul. 13, 1981, Ser. No. 282,480
Int. Cl.[3] C23F 7/10
U.S. Cl. 148—6.15 Z 16 Claims

1. An aqueous zinc phosphate conversion coating solution comprising:

(A) from about 0.05% to about 2.5% zinc ions;

(B) from about 0.15% to about 7.5% phosphate ions;

(C) from about 0.05% to about 5.0% aromatic nitro anion having no more than two nitro groups; and

(D) from about 0.05% to about 5.0% chlorate anion, wherein the ratio of said chlorate anion to said aromatic nitro anion is from less than about 2:1 up to about 1:2.

4,498,936

INSULATIVE COATING COMPOSITION FOR ELECTRICAL STEELS

Michael H. Haselkorn, Franklin, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed May 21, 1984, Ser. No. 612,450
Int. Cl.[3] C23F 7/10
U.S. Cl. 148—6.15 R 14 Claims

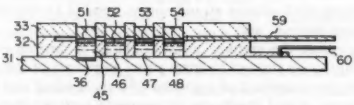
1. An aqueous coating composition for forming an insulative coating directly on electrical steels and on electrical steels having a mill glass thereon, said composition consisting essentially of, on a water-free basis, from 3 parts to 11 parts by weight Al^{+++} calculated as Al_2O_3, from 3 parts to 15 parts by weight Mg^{++} calculated as MgO, from 78 parts to 87 parts by weight $H_2PO_4^-$ calculated as H_3PO_4, the sum of said Al^{+++}, Mg^{++} and $H_2PO_4^-$ totaling 100 parts by weight on a water-free basis calculated as Al_2O_3, MgO and H_3PO_4, respectively, and from about 30 parts to about 250 parts by weight aluminum silicate calculated as $Al_2O_3.SiO_2$ per 100 parts Al_2O_3, MgO, and H_3PO_4, on a water-free basis, at least 50% by weight of said composition being water.

4,498,937

LIQUID PHASE EPITAXIAL GROWTH METHOD

Shoji Isozumi, and Toshihiro Kusunoki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 28, 1983, Ser. No. 489,348
Claims priority, application Japan, Apr. 28, 1982, 57-072442
Int. Cl.[3] H01L 21/208
U.S. Cl. 148—171 16 Claims



1. A liquid phase epitaxial growth method for growing a compound semiconductor layer on a semiconductor substrate comprising the steps of:

(a) bringing a semiconductor material solution, containing at least one of the components forming the compound semiconductor layer, into contact with a crystalline plate which has a composition different from that of the semiconductor substrate and contains at least one of the components forming the compound semiconductor layer, the semiconductor component in the crystalline plate is dissolved into the semiconductor material solution and a supercooling condition occurs in the semiconductor material solution, the crystalline plate having a crystal face having a higher Miller index than that of the semiconductor substrate; and

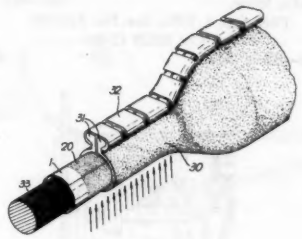
(b) bringing the semiconductor material solution into contact with the semiconductor substrate to form the compound semiconductor layer on the semiconductor substrate.

4,498,938

SPLICING, BRANCHING OR TERMINATING CABLE

Marc Moisson, Strombeek-Bever; Lodewijk Van Noten, LeUven; Noel Overbergh, Bertem; Joris Franckx, Bonheiden, and Valere Buekers, Zelem, all of Belgium, assignors to N.V. Raychem S.A., Kessel-lo, Belgium

Continuation of Ser. No. 494,691, May 17, 1983, abandoned, which is a continuation of Ser. No. 261,400, May 7, 1981, abandoned. This application Nov. 2, 1983, Ser. No. 549,002
Claims priority, application United Kingdom, May 12, 1980, 8015697; Dec. 2, 1980, 8038629
Int. Cl.[3] B21F 15/06; H01R 3/02
U.S. Cl. 156—49 47 Claims



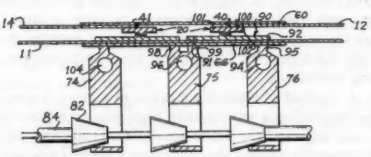
1. A method of enclosing a cable splice, branchout, or termination, having a plurality of insulated cable portions extending therefrom, which comprises positioning a heat-recoverable member around the splice, branchout or termination in such a manner that a plurality of insulated cable portions extend from at least one end of said member; placing around at least one of the cable portions individually a metal foil member of such stiffness as substantially to prevent radial distortion or indentation of the insulation of the cable portion during heat recovery of the heat-recoverable member; and heating said member to cause recovery thereof.

4,498,939

METHOD AND APPARATUS FOR MAKING ZIPPER BAGS

James R. Johnson, 3819 Greenhill Dr., Chamblee, Ga. 30341

Filed Jan. 3, 1983, Ser. No. 455,338
Int. Cl.[3] B65D 27/20
U.S. Cl. 156—66 9 Claims



1. A method for making plastic bags having zipper closures, wherein said bags are made of a light gauge thermoplastic and said zipper closures are made of a heavy gauge thermoplastic, said method including the steps of feeding bag material along a path, said bag material including a back and opposed front pieces, feeding a first strip of zipper material along said path adjacent to one front piece and feeding a second strip of zipper material along said path adjacent to the other front piece, lifting said front pieces from said back and feeding said zipper

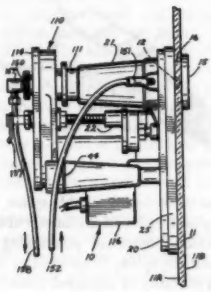
material into position between said back and said front pieces, aligning said first strip and said second strip of zipper material with said bag material, moving said bag material with said zipper material along said path while engaging the front of said bag material with a first belt and engaging the back of said bag material with a second belt, holding sealing rails against said second belt while heating said sealing rails sufficiently to seal said back to said zipper material, further feeding said bag material along said path, directing air against the front piece of said bag material, and heating said air sufficiently to seal said front piece to said zipper material, slitting said bag material longitudinally, and sealing transverse lines across said bag material to side seal and separate bags from said bag material.

4,498,940

PLATE GLASS REPAIR APPARATUS AND METHOD

Paul S. Petersen, Minnetonka, Minn., assignor to Novus Inc., Minneapolis, Minn.

Filed Sep. 1, 1983, Ser. No. 528,728
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—98 **14 Claims**



1. An apparatus for cutting a hole in a rigid sheet such as a glass pane to be repaired, comprising a plate, means forming a plurality of intersecting grooves in a first surface of said plate, first perimeter seal means defining an area of said plate surrounding said grooves and defining a plane, vacuum pump means mounted on said plate and operable to evacuate the area within the first seal means, to thereby hold the plate against a surface of glass to be repaired, a cutter member mounted on said plate for movement generally normal to the plane defined by the first seal means and operable to pass through such plate to engage a pane of glass on which the plate is supported, second seal means surrounding said cutter member and defining a chamber of larger size than the cutter member fluidly isolated from the rest of the area within the first perimeter seal means, and fluid pressure means to provide a flow of fluid across the edges of the cutter to exhaust passage means to provide for a flow of fluid across the cutter member during cutting operations.

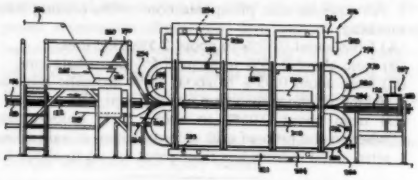
11. A method of repairing a crack in a pane of glass which comprises placing a substantially rigid plug on a first surface of said pane adjacent the crack area and of sufficient size to extend outwardly beyond the crack area a desired amount, securing said rigid plug on the surface of the glass, mounting a cutter member on an opposite surface of the pane of glass, cutting an annular slit through the pane of a diameter sufficient to form a glass plug which surrounds the crack but is of diameter less than the perimeter size of said rigid plug from the opposite side only, removing the cutting member, removing the rigid plug from the surface of the pane of glass and removing the glass plug, forming a cylindrical glass disc of only slightly smaller size than the hole left by the cutter, and affixing the glass disc into position in the opening in the pane of glass.

4,498,941

METHOD FOR PRODUCING FIBER REINFORCED SHEET STRUCTURES

William B. Goldsworthy, Palos Verdes Estates, Calif., assignor to Goldsworthy Engineering, Inc., Torrance, Calif.

Division of Ser. No. 290,357, Aug. 5, 1981, Pat. No. 4,402,778.
This application Aug. 29, 1983, Ser. No. 526,984
Int. Cl.³ B32B *31/06, 31/20*
U.S. Cl. 156—148 **12 Claims**



1. A method of producing a reinforced plastic composite panel segments on a continuous basis comprising:

(a) endwise abutting a plurality of rigid panels in a generally common plane and where each of the rigid panels has a pair of spaced apart first sides and a pair of spaced apart second sides and pair of relatively flat opposite surfaces, such that the first sides are generally aligned on opposite sides of the panels and the second side of the panels are endwise abutted and the relatively flat opposite surfaces of said panels are generally coplanar,

(b) moving said endwise abutted panels successively and while in endwise abutted engagement through a first application station and a second application station,

(c) wrapping a plurality of first strands of fiber reinforcing material at said first application station in closely spaced relationship to one another about and around said pair of spaced apart first sides and across said relatively flat opposite surfaces of said endwise abutted panels,

(d) applying a plurality of second strands of fiber reinforcing material at said second application station in closely spaced relationship to each of the opposite flat surfaces of said endwise abutted panels so that the second strands extend beyond the spaced apart second sides of some of said panels, said plurality of first strands and plurality of second strands having been impregnated with a curable binder,

(e) curing the binder and bonding the binder impregnated first and second strands to one another to effect a woven strand sheet extending for the entire surface area of a plurality of the endwise abutted panels and to bond same to said panels to form a succession of endwise abutted panels with woven strand sheets bonded to opposite surfaces thereof, and

(f) severing the endwise abutted panels at desired positions lengthwise thereof to form panel segments of the desired length comprised of a portion of a rigid panel and formed woven strand sheets on the opposite surfaces thereof.

4,498,942

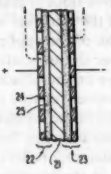
ELECTROLYSIS APPARATUS USING A DIAPHRAGM OF A SOLID POLYMER ELECTROLYTE, AND METHOD FOR PRODUCTION THEREOF

Hiroshi Asano; Takayuki Shimamune, and Toshiki Goto, all of Chiba, Japan, assignors to Permelec Electrode Ltd., Tokyo, Japan

Division of Ser. No. 217,608, Dec. 18, 1980, Pat. No. 4,457,822.
This application Jun. 13, 1983, Ser. No. 503,452
Claims priority, application Japan, Dec. 27, 1979, 54-169406
Int. Cl.³ B32B *31/12*; C25B *9/00*
U.S. Cl. 156—151 **5 Claims**

1. A method for producing an electrolysis apparatus which comprises

forming a gas-permeable electrically conductive substrate,
bonding a film-like porous electrode catalyst layer integrally to the gas-permeable electrically conductive substrate to form at least one electrode structure, and then
providing a porous electrically conductive coating having substantially non-catalytic activity on the surface of said



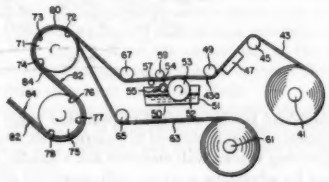
film-like porous electrode catalyst layer or on the surface of a diaphragm of a solid polymer electrolyte wherein said solid polymer electrolyte is an ion-exchange membrane, and then
bonding, through said coating, said film-like porous electrode catalyst layer to said diaphragm.

4,498,943

APPARATUS FOR PRODUCING COMPOSITE CORRUGATING MEDIA FOR THE MANUFACTURE OF CORRUGATED FIBERBOARD AND METHOD OF MAKING SAME

Shuji Itoh, and Koichi Hayashi, both of Tokyo, Japan, assignors to Kyokuto Fatty-Acid Corporation, Tokyo, Japan

Filed May 17, 1982, Ser. No. 379,017
Claims priority, application Japan, Jun. 8, 1981, 56-086924
Int. Cl.³ B32B *31/08*
U.S. Cl. 156—164 **13 Claims**



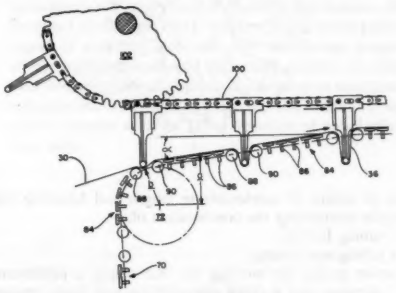
1. A method for the manufacture of corrugating medium for producing corrugated fiberboard by laminating a first and second web of corrugating medium to produce a composite corrugating medium comprising the steps of:
(a) supplying a first and a second web of corrugating medium from different sources such that one of said webs is under tension and the other is substantially tension-free;
(b) applying a coating of a water-soluble adhesive onto the entire area of one side of at least one web of said first and second webs of corrugating medium;
(c) conveying said first and second corrugating mediums over the surface of a first heating cylinder such that the water-soluble adhesive is between the first and second corrugating medium to join them together into a loosely bound composite corrugating medium having first and second surfaces;
(d) applying heat to said first surface of said composite corrugating medium in a first heating step by means of said first heating cylinder such that the adhesive is not fully hardened so that the web under tension and the substantially tension-free web can mutually slide one over the other to smooth out and adjust for any surface irregularities; and
(e) passing said second and opposite surface of said composite corrugating medium over a second heating cylinder, which is substantially the same size as said first heating cylinder, to subject said composite medium to a second heating step;
wherein said first and second heating cylinders are arranged in such relationship that the pathway of the composite corrugating medium is defined by gradual curves to avoid sharp bending and excessive stress on said composite corrugating medium.

4,498,944

METHOD AND APPARATUS FOR PRODUCING AN ELASTICIZED GARMENT BY TUCKING A PORTION OF THE DIAPER WEB DURING BONDING OF ELASTIC TO THE UNTUCKED PORTIONS OF THE WEB

Charles E. Krause, and William J. Moore, both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 18, 1982, Ser. No. 340,543
Int. Cl.³ B32B *31/08*
U.S. Cl. 156—205 **8 Claims**



1. In an apparatus for applying elastic ribbon to spaced apart areas of a continuously moving web, said apparatus having a feed end at which the web is fed to the apparatus and an exit end at which the web and elastic leave the apparatus, the combination comprising:
first conveyor means onto which the web is fed including web supporting means engaging the web and having spaced apart gaps therein;
a plurality of tucker bar means;
second conveyor means for carrying the tucker bar means through the apparatus and moving the tucker bar means and spaced portions of the web into said gaps to form tucks in the web;
guide means for positioning the gaps of the first conveyor to permit gradual movement of the tucker bar means in the gaps and forming of the tucks;
each tucker bar means has a position, at the feed end of the apparatus, in that portion of the gap most adjacent said feed end and advances to a position, while moving through said apparatus, in that portion of the gap most adjacent said exit end;
means for moving the elastic ribon to a position spanning said tucks and in engagment with the spaced apart areas of the web; and
means for adhering the elastic ribbon to the web.

4,498,945

METHOD AND MEANS FOR SPOOLING TUBING

Peter Balnave, Glen Rock, N.J., assignor to Kahle Engineering Company, Union City, N.J.

Filed Dec. 1, 1983, Ser. No. 556,967
Int. Cl.³ B29B *3/00*
U.S. Cl. 156—256 **12 Claims**

1. An improved method of cutting lengths of tubing from a

spool of tubing of indeterminate length and handling the cut lengths comprising the steps of:

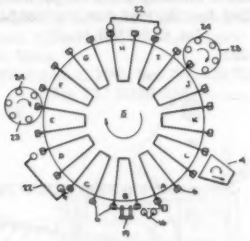
drawing the end of the spooled tubing generally downwardly to an end clamp;

moving the clamped end a predetermined distance horizontally and forming a vertically hanging slack loop of predetermined tube length between the clamped end of the tubing and the spool;

moving an intermediate portion of the tubing between said loop and spool downwardly into a second end clamp spaced from said first clamp;

cutting the tubing at the second clamp on the roll side of the tubing thereby forming a cut tube of predetermined length clamped at its opposite ends.

7. An improved means for cutting lengths of tubing from a



roll of tubing of indeterminate length and handling the cut lengths comprising the combination of:

a tubing feeder;

a tubing end clamp;

turret means for moving the end clamp a predetermined distance and a spool assembly on said turret means for forming a slack loop of predetermined tube length between the clamped end of the tubing and the spool;

feeder means on said turret for moving an intermediate portion of the tubing between said loop and spool into a second end clamp spaced from said first clamp;

a second tubing end clamp;

knife means for cutting the tubing at the second clamp on the roll side of the tubing thereby forming a cut tube of predetermined length including a slack loop clamped at its opposite ends.

4,498,946

APPARATUS AND METHOD FOR MANUFACTURING A SANDWICH WEB

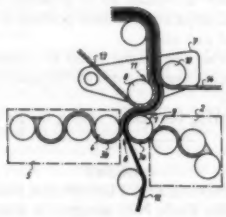
Ernst Schöllkopf, Rechthalten, and Walter Rimmele, Fribourg, both of Switzerland, assignors to Polytype AG, Switzerland

Filed Aug. 26, 1983, Ser. No. 526,799

Claims priority, application Sweden, Sep. 24, 1982, 8205481

Int. Cl.³ B32B *31/06*

U.S. Cl. 156—324 **7 Claims**



6. A method for the manufacturing of a sandwich web using a pair of applicator rollers which are coatable with adhesive and are separately rotatably driven and arranged so as to form a first roller nip therebetween and using a plurality of laminating rollers one of which may be arranged serially to form a nip with one of the applicator rollers and the other of which may be arranged serially to form a nip with said one laminating roller, comprising directing a substrate serially between the first roller nip between the applicator rollers while continuing to apply a film of adhesive over each of the applicator rollers and feeding it to respective sides of said substrate, directing the adhesive coated sides of the substrate in the nip between a first laminating roller and one of the applicator rollers while feeding a first lining web over the associated first laminating roller to bond it to the adhesive on the adjacent side of the substrate, releasing the other adhesively coated side from the applicator roller on the opposite side of the substrate and passing from the substrate through the nip between the first laminating roller and the other of said laminating rollers while feeding a second liner onto the adhesive on the opposite face of the substrate.

4,498,947

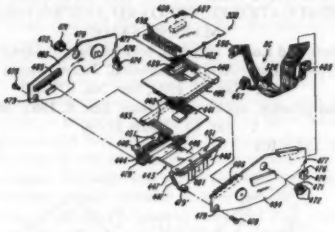
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, and James A. Makley, Dayton, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Feb. 28, 1984, Ser. No. 582,339

Int. Cl.³ B65C *11/02*

U.S. Cl. 156—384 **20 Claims**



1. A hand-held labeler adapted to print and apply pressure sensitive labels releasably secured to a carrier web, comprising: a housing having spaced wall members and a handle, means in the housing for advancing a carrier web, means for printing on labels including a print head having electrically selectable printing elements, means for delaminating printed labels, means for applying printed labels, means defining a path for guiding the web from a label supply roll to the printing means, to the delaminating means and to the web advancing means, a keyboard, circuitry for electrically connecting the keyboard and the print head, the circuitry including a first printed circuit board extending generally horizontally between the wall members and a second printed circuit board extending generally vertically, a plug-type connection connecting the first and second printed circuit boards, and means for resiliently mounting the first and second circuit boards within the housing.

20. A hand-held labeler adapted to print and apply pressure sensitive labels releasably secured to a carrier web, comprising: a housing having spaced wall members and a handle, means in the housing for advancing a carrier web, means for printing on labels including a print head having electrically selectable printing elements, means for delaminating printed labels, means for applying printed labels, means defining a path for guiding the web from a label supply roll to the printing means, to the delaminating means and to the web advancing means, a keyboard, circuitry for electrically connecting the keyboard and the print head, the circuitry including a printed circuit board, a resilient holder for mounting the printed circuit board, the holder including a pair of spaced holder members for holding the printed circuit board, each holder member having a flange, means for securing the flanges to the housing, the

circuitry including another printed circuit board, and plug-in type connectors connecting the printed circuit boards to each other.

4,498,948

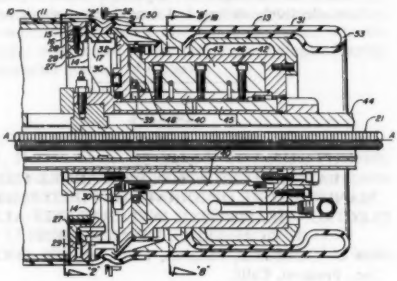
BEAD LOCKING DEVICE OF A TIRE BUILDING DRUM

Robert L. Brown; Virgil E. Henley, and Stephen J. Kovalchik, all of Akron, Ohio, assignors to GenCorp Inc., Akron, Ohio

Filed Aug. 24, 1983, Ser. No. 525,858

Int. Cl.³ B29H *17/22*

U.S. Cl. 156—401 **16 Claims**



1. A tire building drum, comprising:

(a) an outer cylindrical shell on which at least one carcass ply of unvulcanized rubbery material can be layered, the shell having a longitudinal center axis and a centerplane which divides the shell in half longitudinally, the shell having a pair of opposing ends;

(b) a set of bead lock members adjacent each of the opposing ends of the shell, each set of bead lock members being concentrically, disposed about the center axis of the shell and including a plurality of bead lock members which are angularly spaced about the center axis of the shell and which are reciprocative, in unison, in radial directions to and from the center axis of the shell;

(c) a scroll member disposed concentrically about the center axis of the shell in side-by-side relationship with each set of bead lock members and rotatable about the center axis of the shell;

(d) means for rotating the scroll members, in unison, about the center axis of the shell in either rotary direction; and

(e) means coacting between each scroll member and each set of bead lock members for moving the bead lock members radially in response to rotation of the scroll member.

4,498,949

SPLICING APPARATUS FOR CROSS-FLUTE CORRUGATED BOARD

Rolf Soennichsen, Hamburg, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,715

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142832

Int. Cl.³ B31F *1/20*

U.S. Cl. 156—462 **22 Claims**

7. Apparatus for splicing together a plurality of successive coplanar single facer corrugated paperboard sections (**70**) to form a continuous spliced corrugated web (**2**) having longitudinally extending flutes, each of said sections including rectangular planar upper and corrugated lower layers (**70***a*, **70***b*) having corresponding length and width dimensions, respectively, the planar layer of each section being slightly offset relative to said corrugated layer in the direction of the flutes thereof, whereby portions of the planar and corrugated layers protrude at the rearward and forward ends of the sections, respectively, said sections being arranged with their flutes extending in parallel longitudinal alignment, respectively, comprising

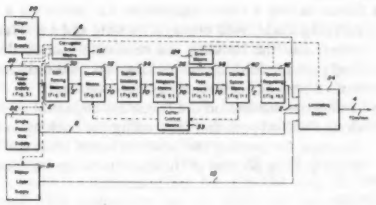
(a) a frame;

(b) means for transporting the spliced web (**2**) longitudinally of the frame at a given linear velocity;

(c) means for supplying a plurality of said sections to a first position on said frame adjacent the trailing end of said spliced web, said section supplying means including

(1) single facer corrugator means (**28**; **50**) for supplying a fibrous first web (**2'**) longitudinally of said frame, said first web having planar upper and corrugated lower layers (**2***a'*, **2***b'*), respectively, the flutes of the lower layer extending tranversely of the web and the planar upper layer being slightly laterally offset relative to the lower layer, whereby portions of the layers protrude relative to each other at opposite longitudinal edges of the web, said first web being supplied longitudinally of the frame;

(2) deflecting means for progressively turning said first web through an angle of 90°, said deflecting means including a stationary web-deflecting roll member (**54**) arranged at an angle of 45° relative to the initial path of travel of said first web, said first web being progressively guided around said deflecting member to direct said first web laterally outwardly relative to said frame, whereby the flutes of the turned portion of the first web extend parallel with the initial direction of travel of said first web;



(3) severing means (**32**) arranged laterally outwardly of said frame for severing the turned portion of said first web into successive sections (**70**) the flutes of which extend parallel with the initial direction of travel of said first web;

(4) transverse conveyor means (**66**, **67**) for transporting said severed sections laterally inwardly relative to said frame; and

(5) longitudinal conveyor means (**74**) arranged longitudinally of said frame for receiving the severed sections from said transverse conveyor means and for transporting the sections longitudinally toward said first position, whereby the sections (**70**) are arranged on said longitudinal conveyor means with the flutes extending longitudinally in the direction of the conveyance;

(d) means for accelerating successive sections (**70**) from said first position toward a splicing position in which the protruding corrugated layer portion (**70***b*) at the forward end of the section is in generally underlying relation relative to the protruding planar layer portion (**2***a*) at the trailing edge of the spliced web, the flutes of said protruding corrugated layer portion being in flute-enmeshing engagement with the adjacent corrguated layer portion (**2***b*) of said spliced web; and

(e) upper and lower splicer roller means (**140**,**142**) for bonding the trailing portion of the spliced web with the leading portion of the section.

4,498,950

PORTABLE LABEL APPLYING MACHINE

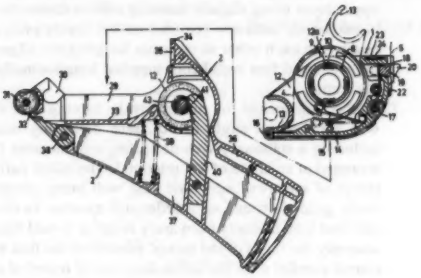
Yo Sato, Tokyo, and Tadao Kashiwaba, Kitagami, both of Japan, assignors to Kabushiki Kaisha Sato, Japan

Division of Ser. No. 452,707, Dec. 23, 1982, Pat. No. 4,436,573, which is a continuation-in-part of Ser. No. 368,732, Apr. 15, 1982, Pat. No. 4,440,592. This application Mar. 7, 1984, Ser. No. 587,274

Claims priority, application Japan, Apr. 30, 1981, 56-66223; Dec. 28, 1981, 56-210021; Jan. 20, 1982, 57-4943[U]

Int. Cl.[3] B65C *11/00*

U.S. Cl. 156—577 31 Claims



1. A label applying device for applying labels peeled from a web of backing, the web being carried in a cassette, the device comprising:

a frame having a receiving section for receiving a cassette carrying a label web having a backing and a series of labels adhered to the backing; the receiving section defining a feed path for feeding the backing in a feed direction away from a peeling section of the cassette; and

a feeding mechanism on the frame for engaging the backing along the feed path and for feeding the backing in the feed direction for peeling the labels in series from the backing at the peeling section of the cassette as the backing is fed.

4,498,951

METHOD OF MANUFACTURING SINGLE-CRYSTAL FILM

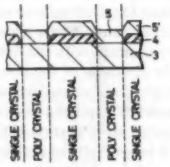
Masao Tamura, Tokorozawa; Naotsugu Yoshihiro, Matsudo; Nobuyoshi Natsuaki, Kodaira; Masanobu Miyao, Tokorozawa; Makoto Ohkura, Hachioji; Hideo Sunami, Nishitama, and Takashi Tokuyama, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,206

Claims priority, application Japan, Oct. 9, 1981, 56-160193

Int. Cl.[3] C30B *25/04*

U.S. Cl. 156—612 18 Claims



1. A method of manufacturing a single-crystal film, comprising:

(1) a step of forming an insulating film in a desired position on a single-crystal substrate to provide a pattern with openings through which portions of the surface of said single-crystal substrate are exposed, said insulating film having a thermal conductivity lower than the thermal conductivity of said single-crystal substrate;

(2) a step of depositing a polycrystalline or amorphous semiconductor film to continuously cover said exposed surface portions of said substrate and said insulating film; and

(3) a step of irradiating a whole surface of said polycrystalline or amorphous semiconductor film with a laser beam or electron beam having an energy intensity below a critical energy so that the beam will not cause the polycrystalline or amorphous semiconductor film deposited on the substrate to turn into a single crystal and whereby those portions of said polycrystalline or amorphouse semiconductor film which are deposited on said insulating film are selectively melted and turned into a single crystal.

4,498,952

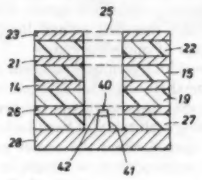
BATCH FABRICATION PROCEDURE FOR MANUFACTURE OF ARRAYS OF FIELD EMITTED ELECTRON BEAMS WITH INTEGRAL SELF-ALIGNED OPTICAL LENSE IN MICROGUNS

Alton O. Christensen, Milpitas, Calif., assignor to Condesin, Inc., Fremont, Calif.

Filed Sep. 17, 1982, Ser. No. 419,499

Int. Cl.[3] B44C *1/22;* H01L *21/306;* C23F *1/02;* B05D *5/12*

U.S. Cl. 156—643 13 Claims



1. A method of manufacture for fabrication of an array of microguns assisted by a supportive substrate which method comprises the steps of

(a) defining a plurality of microgun locations on a substrate by forming aligned parallel ridges in a pattern of M by N wherein the M by N pattern defines sites of microguns in M columns and N rows and the pattern comprises upstanding ridges through the sites of the microguns;

(b) depositing conductive material aligned with the ridges in the form of deflection bars on opposite sides of the ridges at the microgun sites determined in the M by N pattern and further wherein the microgun sites in rows and columns have the respectively defined deflection bars therefore;

(c) depositing over the deflection bars an insulative layer;

(d) depositing over the insulative layer a conductive layer having an opening at each microgun site which opening is defined by the ridges;

(e) removing the ridge material to leave a cavity within the deflection bars and aligned below the opening in the conductive layer thereabove;

(f) forming a conductive substrate at the bottom of the cavity; and

(g) depositing a microgun in the cavity on the conductive substrate for emitting electrons into the cavity for deflection by the deflection bars wherein the electrons are directed through the opening formed in the conductive layer.

4,498,953

ETCHING TECHNIQUES

Joel M. Cook, Union Township, Hunterdon County; Vincent M. Donnelly, Berkeley Heights; Daniel L. Flamm, Chatham Township, Morris County; Dale E. Ibbotson, Westfield, and John A. Mucha, Madison, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 27, 1983, Ser. No. 517,754
Int. Cl.[3] B44C *1/22*; C03C *15/00, 25/06*; C23F *1/02*
U.S. Cl. 156—646 22 Claims

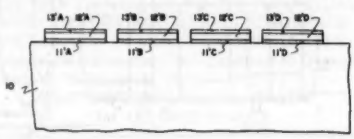
1. A process for manufacturing a device comprising the steps of (1) subjecting a substrate to an etchant to produce selective etching of a first region of said substrate relative to a second region and (2) completing said device characterized in that said etchant comprises a polyatomic halogen fluoride and said first region comprises a non-oxide tantalum composition wherein said substrate is subjected to said polyatomic halogen fluoride in the substantial absence of a plasma.

4,498,954

SELECTIVE PROCESS FOR ETCHING CHROMIUM

Dennis L. Huston, Crystal; Vahram S. Kardashian, Plymouth, both of Minn., and Arthur H. Mones, Oak Park, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 9, 1984, Ser. No. 597,952
Int. Cl.[3] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—651 14 Claims



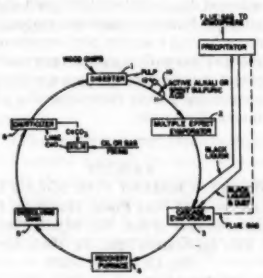
1. A method of etching chromium, said method including a cycle of steps, said cycle comprising the steps of:
contacting said chromium with a first solution, said first solution including potassium permanganate;
thoroughly rinsing said chromium in order to remove said first solution;
contacting said chromium with a second solution, said second solution including oxalic acid; and
thoroughly rinsing said chromium layer in order to remove said second solution.

4,498,955

CONTROL OF ACTIVE ALKALI IN BLACK LIQUOR

H. Wharton Nelson, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 1, 1983, Ser. No. 528,483
Int. Cl.[3] D21C *11/12*
U.S. Cl. 162—30.11 6 Claims



1. A Kraft process for producing pulp by dissolving lignin with a mixture of sodium hydroxide and sodium sulfide, including,
cooking wood chips in a digester containing sodium hydroxide and sodium sulfide,
drawing weak black liquor from the digester,
determining the concentration of active alkali in the weak black liquor on a dry solids basis,
generating a control signal proportional to the concentration of active alkali,
controlling the addition of alkali and/or acid to the weak black liquor flowing from the digester in accordance with the measurement of active alkali concentration to maintain the active alkali concentration at or above 3%.

4. In a Kraft pulping system circulating black liquor from a digester through evaporators for smelt recovery in a furnace, a control system for the active alkali concentration, including,
means arranged responsive to the concentration of active alkali in the black liquor flowing from the digester and generating a control signal proportional to the active alkali concentration on a dry solids basis,
a source of alkali and/or acid connected to add the alkali/acid to the weak black liquor flowing from the digester,
and means for controlling the amount of alkali/acid added from the source and responsive to the control signal of the responsive means to maintain the percentage of active alkali in the weak black liquor at 3% or above.

4,498,956

APPARATUS AND METHOD FOR THE MANUFACTURE OF A NON-WOVEN FIBROUS WEB

James O. Cheshire, Neenah; Douglas L. Lindgren, Appleton; Robert J. Marinack, Oshkosh; Bruce W. Janda, Neenah; Robert S. Thut, Green Bay; John T. Larkey, Green Bay, and Ray E. Jostad, Green Bay, all of Wis., assignors to James River-Norwalk, Inc., Norwalk, Conn.

Continuation of Ser. No. 305,738, Sep. 25, 1981, Pat. No. 4,443,297, which is a division of Ser. No. 179,229, Aug. 18, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 540,566
The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.
Int. Cl.[3] D21D *3/00*
U.S. Cl. 162—101 5 Claims

1. A method for the production of non-woven fibrous web on a moving foraminous support which comprises:
a. forming a foamed fiber furnish by dispersing fibers in a foamed liquid comprising water and a surface active agent containing 55 to 75 percent air by volume and capable of supporting and transporting fibers as a dispersion therein;
b. supplying said foamed fiber furnish to a moving foraminous support web-forming means without substantial further turbulence or agitation effecting formation of said web whereby air is entrained in foamed liquid passing through said foraminous support;
c. collecting foamed liquid passing through said foraminous support;
d. storing said collected foamed liquid for a period of time sufficient to permit said foamed liquid to stratify into an upper frothy layer and a lower more dense layer of foamed liquid containing 55 to 75 percent air by volume capable of supporting and transporting fibers as a dispersion therein;
e. separating said more dense layer of foamed liquid containing from about 55 to about 75 percent air by volume from said frothy layer of less dense foam; and
f. recirculating said more dense layer of foamed liquid directly to step a. for the preparation of said foamed fiber furnish.

4,498,957

AROMATIC POLYAMIDE PAPER-LIKE SHEET AND PROCESSES FOR PRODUCING THE SAME

Hideharu Sasaki, and Keizo Shimada, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 341,540, Jan. 21, 1982, abandoned, which is a continuation of Ser. No. 144,341, Apr. 28, 1980, abandoned. This application Sep. 15, 1983, Ser. No. 532,304

Claims priority, application Japan, May 9, 1979, 54-55640; Aug. 28, 1979, 54-64938

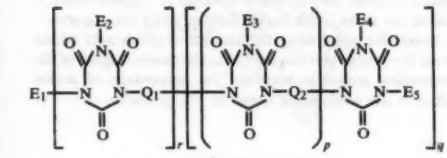
Int. Cl.[3] **D21H** *5/12*

U.S. Cl. 162—146 **20 Claims**

1. A process for producing an aromatic polyamide paper-like sheet, comprising the steps of:

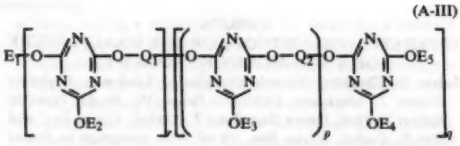
dissolving in an organic solvent an aromatic polyamide material together with a cross-linking agent comprising at least one compound selected from the group consisting of (A) cyanurate and isocyanurate type epoxy compounds of the formula (A-II) and (A-III):

(A-II)



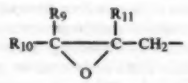
and

(A-III)



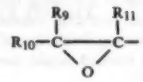
wherein Q_1 represents a di-, tri- or tetra-valent organic radical Q_2 represents a single bond or a di- or more valent organic radical; at least two members of E_1 through E_5 respectively represent, independently from each other, a radical selected from those of the formulae (A-IV) and (A-V):

(A-IV)



and

(A-V)



in which R_9, R_{10}, and R_{11} respectively represent, independently from each other, a hydrogen atom or an organic radical, and the remaining members thereof respectively represent, independently from each other, a radical selected from those of the formulae (A-IV) and (A-V) and a monovalent radical corresponding to the radical represented by Q_1; r represents zero or 1; p represents zero or an integer of from 1 to 10, and; q represents an integer of from 1 to 3;

bringing said polymer solution into contact with a coagulating liquid while vigorously stirring said coagulating liquid to prepare a number of amorphous particles of a mixture of said aromatic polyamide material with said cross-linking agent;

separating said amorphous particles from said coagulating liquid to provide an artificial pulp;

suspending said artificial pulp together with a fiber comprising a number of short fibers in water, to prepare a slurry by which the ratio in weight of said artificial pulp to said fiber is in a range of from 1:9 to 9:1;

forming a precursory paper-like sheet from said slurry by a paper-making method, and;

cross-linking the molecules of said aromatic polyamide with said cross-linking agent in said precursory paper-like sheet by applying radiation of at least one member selected from ultraviolet rays and electron beams or heat to said precursory paper-like sheet.

4,498,958

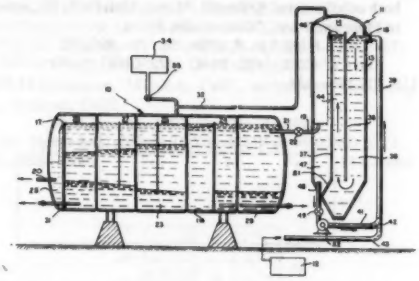
APPARATUS FOR TREATING TAR SANDS EMULSION

Rene F. Bialek, Calgary, Canada, assignor to Texaco Canada Resources Ltd., Calgary, Canada

Filed May 4, 1983, Ser. No. 491,617

Int. Cl.[3] **B01D** *11/04;* **B01F** *5/10;* **C10G** *33/04, 33/06*

U.S. Cl. 196—46 **5 Claims**



1. The combination of an aqueous emulsion separator having a pressurized emulsion separating compartment which is adapted to receive a flow of an aqueous bitumen emulsion comprising primarily water, bitumen and discrete additive materials, whereby to separate the bitumen from said aqueous emulsion,

a mixer element having a compartment for premixing said bitumen emulsion with said discrete additive materials to facilitate separation of bitumen from the emulsion and comprising;

a vessel,

panel means forming interconnected elongated passages in said vessel to define a disontinuous emulsion flow path, having inlet means at one end and outlet means at the other end, said outlet means being connected to said separator,

pump means having a discharge port which is communicated with said discontinuous flow path and with a source of the aqueous bitumen emulsion, respectively, and said pump means having a suction port communicated with the discontinuous flow path at a point intermediate the respective inlet and outlet means to receive a minor stream of the aqueous emulsion and to recirculate the same along said discontinuous flow path.

4,498,959

COOLING ATTACHMENT FOR SOLAR DISTILLER

Minoru Sakamoto, 3911 Nioi Place, Honolulu, Hi. 96816

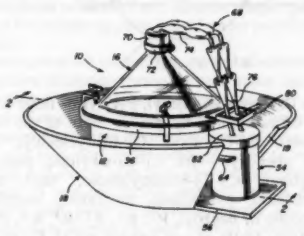
Continuation-in-part of Ser. No. 94,918, Nov. 19, 1979, abandoned. This application Mar. 31, 1982, Ser. No. 363,821

Int. Cl.[3] **B01D** *3/02*

U.S. Cl. 202—185.2 A **9 Claims**

1. In a distillation device having a heat conductive container storing a body of a liquid therein, an enclosure converging upwardly to an outlet and forming a chamber above the body

of liquid therein into which the liquid evaporates and means for condensing vapor within said chamber, the improvement comprising means designed, sized and arranged for both increasing condensation capacity and regulating venting, including conduit means adapted to be connected to the outlet of the enclosure, vent means formed in the conduit means at spaced locations for escape of non-condensibles therefrom, and means for regulating said escape of non-condensibles during flow of the vapor and gas through the conduit means.



4,498,960

ELECTROCHEMICAL METHOD FOR VISUAL DETECTION OF NONMETALLIC SURFACE INCLUSIONS IN METALLIC SUBSTRATES

Israel Rubinstein, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,116
Int. Cl.³ B01D *59/40*
U.S. Cl. 204—1 T **11 Claims**

1. The method of preparing metallic objects for nondestructive inspection for the presence of nonmetallic surface inclusions comprising the steps of:

(a) immersing the metallic object to be nondestructively tested into an electrolytically conductive bath containing at least an active monomer material, and

(b) passing a direct electric current between said object as a first electrode and a second electrode of a material inert in said bath and spaced apart from said object for a time sufficient to polymerize said monomer and deposit on the conducting portions of the surface of said object a thin, dark, substantially continuous film of polymer formed from said monomer.

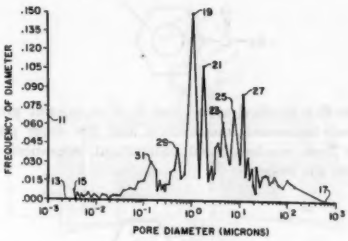
4,498,961

METHOD OF ELECTROLYZING BRINE WITH STABLE LOW VOLTAGE MICROPOROUS DIAPHRAGM IN ELECTROLYTIC CELLS

Christine A. Lazarz, and Edward H. Cook, Jr., both of Niagara Falls, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 130,766, Mar. 17, 1980, Pat. No. 4,297,196. This application Jun. 26, 1981, Ser. No. 277,531
Int. Cl.³ C25B *1/14, 1/26, 9/00, 13/02*
U.S. Cl. 204—98 **2 Claims**

2. A method of electrolyzing brine which comprises passing a direct electrical current through the brine between an anode and a cathode, with the anode and cathode being separated by a microporous synthetic organic polymeric sheet having a thickness in the range of about 0.2 to 2 mm., a porosity in the range of about 70 to 90%, a non-uniform pore size distribution with the volume of pores in the 0.1 to 0.2 micron diameter range being less than 10% of the total pores volume, the volume of pores in the 1 to 2 micron diameter range being from 11% to 40% of the total pores volume, and the ratio of the number of such 0.1 to 0.2 micron diameter pores to the number of such 1 to 2 micron diameter pores being less than 40, which diaphragm is of a sufficiently low resistance so as to operate continuously at a voltage no higher than 4 and a current efficiency in the range of 70 to 98%.

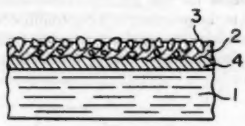


4,498,962

ANODE FOR THE ELECTROLYSIS OF WATER

Yoshio Oda; Hiroshi Otouma, and Eiji Endoh, all of Yokohama, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 7, 1983, Ser. No. 539,952
Claims priority, application Japan, Jul. 10, 1982, 57-175376; Oct. 7, 1982, 57-175375
Int. Cl.³ C25B *1/02, 11/08*
U.S. Cl. 204—129 **9 Claims**



9. In a process for producing oxygen and hydrogen by electrolyzing an aqueous alkaline solution in an electrolytic cell comprising an anode and a cathode, the improvement comprising an anode comprising an electrode substrate and a coating layer formed on the substrate, said coating layer being made of an electrochemically active material comprising Component X selected from the group consisting of nickel, cobalt and mixture thereof, Component Y selected from the group consisting of aluminum, zinc, magnesium and silicon and Component Z selected from the group consisting of a noble metal and rhenium.

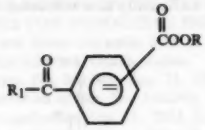
4,498,963

PHOTOPOLYMERIZABLE COMPOSITION CONTAINING PERESTER PHOTOINITIATOR AND PHOTOPOLYMERIZATION PROCESS

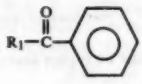
Douglas C. Neckers, Perrysburg, Ohio, assignor to Bowling Green State University, Bowling Green, Ohio

Division of Ser. No. 202,040, Oct. 29, 1980,. This application Aug. 29, 1983, Ser. No. 526,937
Int. Cl.³ C08F *2/50*
U.S. Cl. 204—159.19 **16 Claims**

1. A photopolymerizable composition comprising at least one photopolymerizable ethylenically unsaturated material and at least one photoinitiating compound of the formula:



wherein R is an alkyl group; and R_1 is an organic group free from non-benzenoid unsaturation and free from polymeric moiety from non-benzenoid unsaturated monomeric moiety such that the moiety



is a light-asorbing chromophore group which produces an excited stated by light absorption.

4,498,964

PROCESS FOR THE PHOTOPOLYMERIZATION OF UNSATURATED COMPOUNDS

Rinaldo Hüsler, Basel; Werner Rutsch, and Kurt Dietliker, both of Fribourg, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

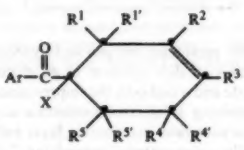
Filed Jun. 9, 1983, Ser. No. 502,860

Claims priority, application Switzerland, Jun. 15, 1982, 3690/82

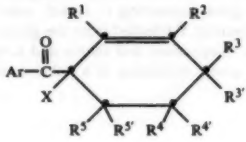
Int. Cl.³ C08F 2/50

U.S. Cl. 204—159.23 **9 Claims**

1. A process for the photopolymerisation of unsaturated compounds in the presence of a photoinitiator belonging to the series comprising the aroyl compounds, which comprises using, as the photoinitiator, one or more compounds formula I, II, III, IV or V

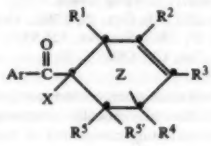


I



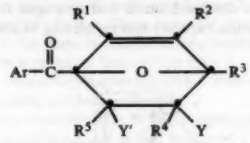
II

III



IV

-continued



V

wherein Ar is C_6–C_{12}-aryl, thienyl, pyridyl or furyl which is unsubstituted or substituted by one or more of the radicals halogen, phenyl, C_1–C_{12}-alkyl, C_5–C_8-cycloalkyl, —OH, C_1–C_4-alkoxy, phenoxy, —SH, C_1–C_4-alkylthio, phenylthio, 2-hydroxyethylthio, C_2–C_5-alkanoylamino, benzoylamino, C_2–C_{12}-dialkylamino, pyrrolidino, piperidino, morpholino, 4-methylpiperazino or benzoyl, R^1, $R^{1'}$, R^2, R^3, $R^{3'}$, R^4, $R^{4'}$, R^5 and $R^{5'}$ independently of one another are H, C_1–C_8-alkyl, phenyl or C_3–C_8-alkenyl, X is a radical —$N(R^6)$ (R^7), —OR^8 or —$OSi(R^9)_2$ (R^{10}) in which R^6 and R^7 independently of one another are H, C_1–C_{12}-alkyl or C_2–C_4-alkyl, C_3–C_5-alkenyl, cycloalkyl, C_7–C_9-phenylalkyl or phenyl which is substituted by OH, C_1–C_{12}-alkoxy, C_2–C_5-carboalkoxy or CN, or R^6 and R^7 together are C_3–C_5-alkylene which can be interrupted by —O— or —$N(CH_3)$—, R^8 is hydrogen, C_1–C_{12}-alkyl, C_3–C_{12}-alkoxyalkyl, C_3–C_5-alkenyl, benzyl, phenyl or 2-tetrahydropyranyl and R^9 and R^{10} are C_1–C_4-alkyl or phenyl, Y is hydrogen, —CN, —COOH, —$COOR^{11}$, —CO—R^{12} or —CO-phenyl, R^{11} being C_1–C_{12}-alkyl, C_2–C_4-hydroxyalkyl, C_3–C_8-alkoxyalkyl or cyclohexyl and R^{12} being hydrogen or C_1–C_4-alkyl, Y' is hydrogen, —COOH or —$COOR^{11}$, or Y and Y' together are —CO—O—CO— and Z is a group of the formula —CH_2—, —CH_2CH_2—, —$C(CH_3)_2$—,

or —O—.

4,498,965

PLATING APPARATUS

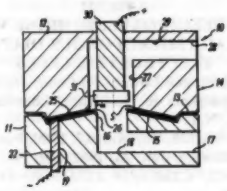
Tsutomu Onda, Nishio; Keiichi Kano, Nagoya, and Shinji Itakura, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 16, 1981, Ser. No. 312,355

Claims priority, application Japan, Oct. 16, 1980, 55-144890

Int. Cl.³ C25D 7/04, 7/02, 3/12

U.S. Cl. 204—228 **8 Claims**



1. A plating apparatus for plating an inner peripheral portion of an annular diaphragm member, comprising:

a lower member including a first vertical passage formed therein having an upper opening, an outlet port in fluid communication with said first vertical passage, and a surface formed around said upper opening for mounting said annular diaphragm member thereon;

an upper member detachably mounted on said lower member so as to form a casing within which said annular diaphragm member is to be positioned, said upper member including a second vertical passage formed therein having

a lower opening opposed to said upper opening, and an inlet port in fluid communication with said second vertical passage, said lower opening having a larger radius than that of said upper opening so as to define an area to be plated on said annular diaphragm member;

positive electrode means positioned above an upper inner peripheral portion of said annular diaphragm member;

means for supplying plating fluid under pressure to said inlet port;

control means for controlling current distribution from said positive electrode means to said upper inner peripheral portion of said annular diaphragm member;

negative electrode means electrically connected to said annular diaphragm member wherein plating fluid supplied to said inlet port under pressure is fed to and discharged from said outlet port and wherein said control means is made of non-conductive material and is positioned between said positive electrode means and said annular diaphragm member in said vertical passage; and

means for moving said control means in a vertical direction of said second vertical passage so as to control current distribution on an upper peripheral portion of said annular diaphragm member.

4,498,966

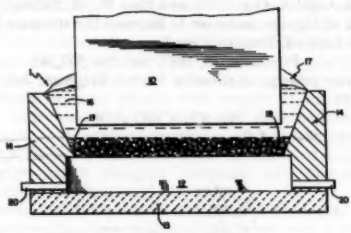
ALUMINA REDUCTION CELL

Alton T. Tabereaux, Sheffield, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 7, 1984, Ser. No. 607,744

Int. Cl.³ C25B *9/00*

U.S. Cl. 204—243 R **6 Claims**



1. In an alumina reduction cell having an anode, a carbonaceous cathode and a packed bed of refractory hard metal (RHM) pieces lying on and in contact with said carbonaceous cathode but not attached thereto and within a pad of molten aluminum the improvement wherein said RHM pieces are hollow shapes between which and through which said molten aluminum may pass.

4,498,967

DEVICE FOR PRODUCING DISPERSION COATINGS

Jean-Francois Paulet, Siblingen, and Othmar Eisenlohr, Dottikon, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

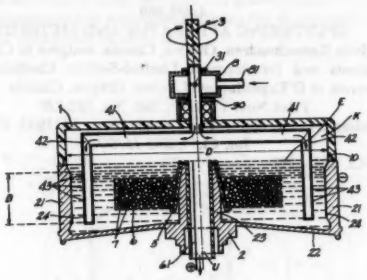
Filed Sep. 23, 1983, Ser. No. 535,269

Claims priority, application Switzerland, Oct. 6, 1982, 5860/82

Int. Cl.³ C25D *17/00, 21/10*

U.S. Cl. 204—272 **12 Claims**

1. Device for producing dispersion coatings on surfaces of metallic parts by electrolyte deposition which comprises a suspension electrolyte which forms the treatment bath and which contains at least one dissolved metal salt and particulate solid which is in suspension, a cathodically polarized surface to be coated in contact with said bath, at least one feed pipe spaced from said surface and having at least one outlet opening, means to jet said surface in the bath with said suspension electrolyte via said feed pipe, and means to move said feed pipe along the workpiece surface which is to be coated spaced from said workpiece, thereby uniformly jetting said surface with



said suspension electrolyte to achieve uniform co-precipitation of said particulate solid and dissolved metal.

4,498,968

OXYGEN SENSOR

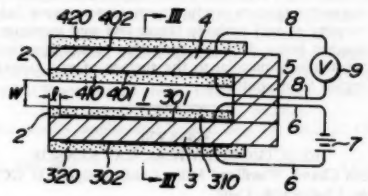
Tetsuyo Yamada, and Yutaka Nakayama, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Aug. 23, 1983, Ser. No. 525,701

Claims priority, application Japan, Mar. 29, 1983, 58-53164

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—412 **12 Claims**



1. An oxygen sensor, comprising an oxygen pump element having a first oxygen-ion-conductive solid electrolyte board with electrode layers attached to opposite surfaces at one end of the first board, an oxygen concentration cell element having a second oxygen-ion-conductive solid electrolyte board with electrode layers attached to opposite surfaces at one end of the second board, a means for coupling said oxygen pump element and said oxygen concentration cell element in parallel to each other with a gap between the electrode layers attached to the opposing surfaces of the first board and the second board, and at least one oxygen diffusion resistive layer deposited on that electrode layer of said oxygen pump element which faces said gap, wherein said gap has a spacing W between opposing surfaces of said two elements, and said gap has an oxygen-diffusion-restricting zone depth S which is a distance from the edge of the electrode layer of the oxygen pump element in said gap to that point where the oxygen partial pressure is restricted to a minimum, said spacing W and said oxygen-diffusion-restricting zone depth S satisfying the condition of $(W/S) < 0.13$, whereby said oxygen pump element transfers oxygen between said gap and the outside of said oxygen sensor therethrough under the presence of said oxygen diffusion resistive layer so as to produce such an oxygen concentration differential between said gap and the outside of the oxygen sensor that said oxygen concentration cell element generates an electomotive force in response to said oxygen concentration differential, a combination of an electric current and said elec-

tromotive force being indicative of oxygen concentration at the outside of the oxygen sensor.

4,498,969

SPUTTERING APPARATUS AND METHOD

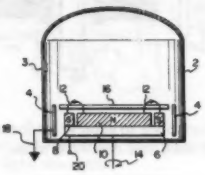
Kovilvila Ramachandran, Ottawa, Canada, assignor to Canadian Patents and Development Limited-Societe Candienne des Brevets et D'Exploitation (Limitee, Ottawa, Canada

Filed Nov. 17, 1983, Ser. No. 552,820

Claims priority, application Canada, Nov. 18, 1982, 415862

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **7 Claims**



1. Sputtering apparatus adapted to form a metallic film on a workpiece, comprising

(a) a magnetron sputter device for establishing a glow discharge,

(b) a cathode target of material to be sputtered so as to coat at least part of said workpiece with said material,

(c) an anode at a different potential to said cathode target to form an electric field therebetween,

(d) a magnet adjacent said cathode target,

(e) an assembly supporting said magnet and capable of rotating said magnet to produce a rotating magnetic field in the vicinity of said cathode target and said workpiece, said magnet being disposed such that said magnetic field is substantially parallel to the surface of said target in the region to be sputtered.

4,498,970

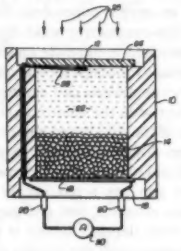
ELECTROCHEMICAL GAS SENSOR

Ramesh Chand, Woodland Hills, Calif., assignor to GC Industries, Chatsworth, Calif.

Filed May 28, 1982, Ser. No. 383,145

Int. Cl.³ G01N *27/30, 27/54*

U.S. Cl. 204—415 **5 Claims**



1. An electrochemical gas sensor, comprising:

a sensor body with a hollow interior;

an electrolyte filling said body;

a counter electrode disposed at one end of the interior of said body;

a sheet of porous material forming a closure at the other end of the interior of said body, and having an inner surface in contact with said electrolyte and an outer surface that is exposed to a gas sample for analysis;

a sensing electrode in the form of a relatively small area of powdered metal impregnated into the inner surface of said sheet by the application of pressure; and

a pair of wires for making contact with said sensing electrode and said counter electrode, respectively, to measure a current between said electrodes generated as a result of the diffusion of gas into said electrolyte through said porous sheet;

whereby said porous sheet ensures that gas diffuses into said electrolyte rapidly enough to yield insensitivity to temperature and a rapid response to pressure changes, but the relatively small area of said sensing electrode results in a relatively small electrical current and a correspondingly long useful life;

and wherein said sheet of porous material is approximately 0.050 to 0.060 inch thick, approximately 0.5 inch in diameter, and has a pore size of approximately 2 to 10 microns, and said sensing electrode is approximately 0.050 inch in diameter.

4,498,971

SEPARATION OF BITUMINOUS MATERIAL FROM OIL SANDS AND HEAVY CRUDE OIL

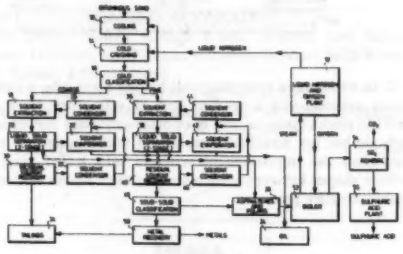
Georgi Angelov, Don Mills, and Paul W. M. Shibley, Oshawa, both of Canada, assignors to Bitumen Development Corporation Limited, Toronto, Canada

Filed Jun. 23, 1983, Ser. No. 507,241

Claims priority, application United Kingdom, Jul. 5, 1982, 8219359

Int. Cl.³ C10G *1/04*

U.S. Cl. 208—11 LE **14 Claims**



1. A process for the separate recovery of oil and asphaltene/polar components from oil and asphaltene/polar bearing sand-containing material,

the process comprising cooling the material to a temperature in the range of from about minus 10° to about minus 180° C. at which the material behaves as a solid,

crushing the material at a temperature at which the material behaves as a solid to produce relatively coarse particles containing a major proportion of the sand and oil and relatively fine particles containing a major proportion of the asphaltenes and polars, mechanically separating the relatively coarse particles from the relatively fine particles at a temperature at which the material behaves as a solid,

treating the relatively coarse particles to recover oil, and

treating the relatively fine particles to recover asphaltenes and polars.

4,498,972

HYDROTREATMENT PROCESS FOR CONVERTING A HEAVY HYDROCARBON FRACTION CONTAINING SULFUR IMPURITIES AND METAL IMPURITIES TO A LIGHTER OIL, IN AT LEAST TWO STEPS

Hervé Toulhoat, Le Pecq; Jean-Claude Plumail, Le Vesinet; Alain Billon, Orlienas, and Alain Quignard, Rillieux La Pape, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 30, 1983, Ser. No. 567,207
Claims priority, application France, Dec. 31, 1982, 82 22180
Int. Cl.³ C10G *65/02*
U.S. Cl. 208—59 15 Claims

1. A process for the hydrotreatment of a heavy hydrocarbon fraction containing sulfur impurities and metal impurities, comprising the steps of:

(a) passing said hydrocarbon fraction in admixture with hydrogen, under hydrodemetallation conditions, over a catalyst comprising a carrier and from 0.1 to 5% by weight, calculated as metal oxides, of at least one metal or compound of a metal from at least one of groups V, VI and VIII, said catalyst being in the form of a plurality of juxtaposed conglomerates each formed of a plurality of acicular plates, the plates of each conglomerate being generally oriented radially with respect to one another and with respect to the center of the conglomerate, wherein said catalyst contains a major proportion of wedge-shaped mesopores, and has an improved resistance to pore mouth plugging compared with bimodal or monomodal porous catalysts; and

(b) treating the effluent from step (a) with hydrogen, under hydrodesulfuration conditions, in contact with a catalyst containing a carrier and from 7 to 30% by weight, calculated as metal oxides, of at least one metal or compound of a metal from at least one of groups V, VI and VIII.

4,498,973

MULTIPLE-STAGE CATALYTIC REFORMING WITH GRAVITY-FLOWING DISSIMILAR CATALYST PARTICLES

John G. Sikonia, La Grange, and Richard W. Bennett, Western Springs, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 17, 1983, Ser. No. 505,559
Int. Cl.³ C10G *35/08*
U.S. Cl. 208—63 17 Claims

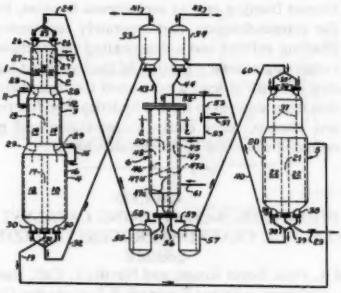
1. A process for the catalytic conversion of a hydrocarbonaceous charge stock wherein said charge stock is contacted with at least two discrete catalytic composite entities comprising the steps of:

(a) contacting said charge stock with a first of said catalytic composite entities at hydrocarbon conversion conditions in a reactor system in which the first catalytic composite entity is downwardly movable via gravity flow to form a first reactor system effluent stream;

(b) serially contacting at hydrocarbon conversion conditions said first reactor stream effluent with at least one other of said catalytic composite entities, each displaced within separate reactor systems in which said catalytic composite entities. are downwardly movable via gravity flow;

(c) at least periodically withdrawing deactivated catalytic composite entities from the reactor systems and passing them in segregated fashion to a common regenerator through which said deactivated catalytic composite entities are downwardly movable via gravity flow;

(d) regenerating in segregated fashion the deactivated catalytic composite entities; and,



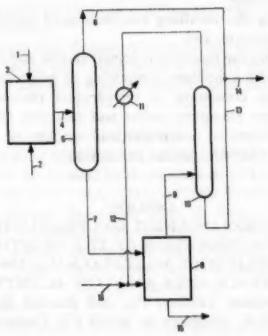
(e) withdrawing regenerated discrete catalytic composite entities from the regenerator in segregated fashion and at least periodically returning the regenerated discrete catalytic composite entities to their respective reactor systems.

4,498,974

PROCESS FOR CONVERTING A HIGHLY VISCOUS HYDROCARBON CHARGE TO A LESS VISCOUS, MORE EASILY TRANSPORTABLE AND MORE EASILY REFINABLE HYDROCARBON FRACTION

Alain Billon, Orlienas; Jean-Francois Le Page, Rueil-Malmaison, and Jean-Pierre Peries, Mornant, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 16, 1983, Ser. No. 532,928
Claims priority, application France, Sep. 17, 1982, 82 15839
Int. Cl.³ C10G *45/58*
U.S. Cl. 208—96 9 Claims



1. A process for converting a highly viscous hydrocarbon charge to a less viscous, more easily transportable and more easily refinable hydrocarbon fraction, comprising the steps of:

(a) subjecting a hydrocarbon charge containing 10 to 30% by weight of constituents normally distilling below 375° C., including 8 to 25% by weight of constituents normally distilling between 200° C. and 350° C., the balance normally distilling above 375° C., to a hydrovisbreaking treatment under conditions wherein the conversion of the 375° C.+ fraction to a 375° C.⁻ fraction is 10–30% by weight, said treatment being initially effected in a hy-

drovisbreaking furnace and completed in a soaking chamber;

(b) fractionating the effluent from step (a), and separately recovering an overhead fraction at least 90% of which normally boils below 375° C., and a distillation residue;

(c) deasphalting the distillation residue from step (b) with a C_4–C_6 hydrocarbon solvent, separately recovering an extract fraction and an asphaltenes fraction, fractionating the extract fraction, and separately recovering the deasphalting solvent and a deasphalted oil fraction; and

(d) admixing at least a portion of the overhead fraction from step (b) with at least a portion of the deasphalted oil fraction from step (c) to form a hydrocarbon fraction which is less viscous, more easily transportable and more easily refinable than said hydrocarbon charge.

4,498,975

PHOSPHORUS-CONTAINING CATALYST AND CATALYTIC CRACKING PROCESS UTILIZING THE SAME

Lloyd A. Pine, Baton Rouge, and Neville L. Cull, Baker, both of La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 381,388, May 24, 1982, Pat. No. 4,454,241. This application Jan. 9, 1984, Ser. No. 569,239

Int. Cl.³ C10G *11/05*

U.S. Cl. 208—114 13 Claims

1. A catalytic cracking process comprising contacting a hydrocarbonaceous feed at catalytic cracking conditions with a catalyst comprising a Y-type crystalline aluminosilicate zeolite prepared from a clay starting material, a residue derived from said clay, and at least about 0.1 weight percent phosphorus, based on the weight of said zeolite plus residue, said Y-type crystalline aluminosilicate zeolite having the structure of faujasite and having a silica to alumina mole ratio of at least about 3:1, said catalyst having been prepared initially by the steps which comprise:

(a) ion-exchanging a clay derived alkali metal-containing Y-type crystalline aluminosilicate zeolite and the clay derived residue with a cation other than an alkali metal to decrease the alkali metal content of said alkali metal-containing zeolite;

(b) calcining the resulting ion-exchanged zeolite and clay derived residue, and

(c) contacting the resulting calcined zeolite and clay-derived residue with a medium comprising an anion selected from the group consisting of dihydrogen phosphate anion, dihydrogen phosphite anion and mixtures thereof for a time sufficient to composite said amount of phosphorus with said calcined zeolite and residue.

4,498,976

SUPPRESSION OF LIGHT GAS PRODUCTION IN CRACKING PROCESSES BY THE ADDITION OF HIGHLY SILICEOUS MATERIALS HAVING HIGH SURFACE AREA AND LOW ACIDITY

Thomas F. Degnan, Yardley, Pa., and Randall D. Partridge, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 15, 1982, Ser. No. 368,548

Int. Cl.³ C10G *11/02*

U.S. Cl. 208—120 13 Claims

1. In a process for reducing light hydrocarbon production and increasing the overall yield of gasoline and distillate range products in a high temperature thermal process which employs temperatures ranging from about 510° C. to 650° C., the improvement which comprises adding to the hydrocarbon chargestock about 0.01 to 5 percent by weight of a highly siliceous zeolite catalyst material having a silica-to-alumina ratio of at least about 50 comprising at least about 98% by weight of silica having a particle diameter ranging from about 0.5 to 200 microns and a surface area of at least about 100 m^2/g of catalyst material.

4,498,977

CATALYTIC OXIDATION OF MERCAPTAN IN PETROLEUM DISTILLATE

Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 29, 1983, Ser. No. 555,910

Int. Cl.³ C10G *27/10, 29/00*

U.S. Cl. 208—207 7 Claims

1. A process for sweetening a sour hydrocarbon fraction containing mercaptan which comprises reacting mercaptans contained in said hydrocarbon fraction with an oxidizing agent in the absence of an alkaline reagent by passing said hydrocarbon fraction and said oxidizing agent without alkaline reagent into contact with a bed of a catalytic composite comprising a metal chelate mercaptan oxidation catalyst and a solid carrier material having an average particle size of less than about 110 mesh.

4,498,978

CATALYTIC OXIDATION OF MERCAPTAN IN PETROLEUM DISTILLATE

Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 29, 1983, Ser. No. 555,930

Int. Cl.³ C10G *27/10, 29/00*

U.S. Cl. 208—207 11 Claims

1. A process for sweetening a sour hydrocarbon fraction containing mercaptan which comprises reacting mercaptans contained in said hydrocarbon fraction with an oxidizing agent by passing said hydrocarbon fraction and said oxidizing agent into contact with a heterogeneous admixture of a supported metal chelate mercaptan oxidation catalyst and a solid desiccant, said desiccant being a component of said admixture in addition to the support for said catalyst.

4,498,979

HYDRODESULFURIZATION PROCESS WITH CONVERSION OF HEAVY HYDROCARBONS UTILIZING A CATALYST CONTAINING A GROUP IIA METAL COMPONENT

Paul E. Eberly, Jr., Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 12, 1983, Ser. No. 530,906

Int. Cl.³ C10G *45/04*

U.S. Cl. 208—216 R 9 Claims

1. A hydrodesulfurization process which comprises: contacting a sulfur-containing heavy hydrocarbonaceous feed comprising materials boiling above 1020° F. with a non-zeolitic catalyst comprising a hydrogenation component, a magnesium component, and an alumina support, the molar ratio of said magnesium component, calculated as metal oxide, to said alumina ranging from 0.012:1 to 0.13:1, in the presence of added hydrogen, in a hydro-desulfurization zone, under conditions to at least partially desulfurize said feed and to convert at least a portion of said 1020° F. materials to lower boiling products.

4,498,980

SEPARATION OF AROMATIC AND NONAROMATIC COMPONENTS IN MIXED HYDROCARBON FEEDS

Paulino Forte, Yonkers, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 14, 1983, Ser. No. 465,914

Int. Cl.³ C10G *21/16*

U.S. Cl. 208—321 31 Claims

1. The mixed extraction solvent for the separation of aromatic and nonaromatic components of a mixed hydrocarbon feed comprising a polyalkylene glycol of the formula:

$$HO—[CHR_1—(CR_2R_3)_n—O—]_mH$$

wherein n is an integer from 1 to 5, m is an integer from 1 to 10, and R_1, R_2 and R_3 may be each be hydrogen, alkyl, aryl, araalkyl and mixtures thereof; and between about 0.5 and 99 percent by weight based on the total weight of the mixed extraction solvent of a polyalkylene glycol ether of the formula

$$R_4O—[CHR_5—(CHR_6)_xO]_y—R_7$$

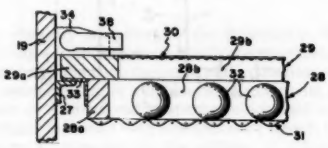
wherein x is an integer from 1 to 5 and y is an integer from 2 to 10 and wherein R_4, R_5, R_6 and R_7 may each be alkyl, aryl, aralkyl, alkyl aryl and mixtures thereof with the priviso that R_4 or R_7 are not both hydrogen.

4,498,981

VIBRATING ANTI-BLINDING CLEANING AND GRADING MACHINES

Robert E. Frevert, Saginaw, Mich., assignor to Crippen Manufacturing Co., Inc., Alma, Mich.

Filed Mar. 26, 1984, Ser. No. 592,537
Int. Cl.[3] B07B *1/30, 1/54, 1/46*
U.S. Cl. 209—243 **4 Claims**



1. Improvements in gyrating anti-blinding grain, seed, and like particulate, cleaning and/or grading machines comprising, in combination:

a. a vertically open perimetral support frame assembly having opposite side members with upper and lower ends;

b. means mounting said assembly for vibratory movement;

c. means for vibrating said assembly;

d. laterally spaced apart horizontally inclined opposed guide members extending along said side members on the interior face thereof to project interiorly thereof, and having upper and lower ends;

e. an enclosed planar ball tray, open at its upper face, and having opposite, horizontally inclined side rails with upper and lower ends spaced apart to be disposed laterally inwardly of said guide members, the ball tray being closed at its bottom by a screen and crosswise partitions connecting the side rails, and there being a series of resilient balls retained within the frame over the length thereof by said lower screen and partitions;

f. relatively reduced thickness flanges fixed on said side rails of the ball tray projecting laterally outwardly from the upper edges thereof to overlie said guide members and be supported thereon;

g. a planar separating screen for separating overs and unders comprising a perforate body spanning opposite side rails which are spaced apart further than said side rails of the ball tray side rails such as to rest on said flanges;

h. clamp means on said assembly exerting a vertical pressure on said screen side rails along their lengths to clamp said screen side rails and ball tray side rails against said guide members; and

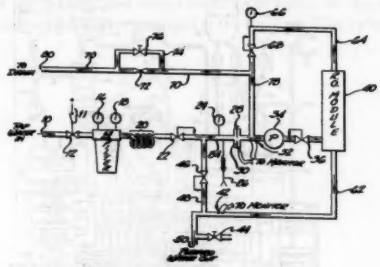
i. means for feeding material to be graded to the upper end of the separating screen.

4,498,982

REVERSE OSMOSIS WATER PURIFICATION SYSTEM

Christopher A. Skinner, St. Petersburg, Fla., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Nov. 8, 1982, Ser. No. 439,680
Int. Cl.[3] B01D *31/00*
U.S. Cl. 210—96.2 **7 Claims**



4. In a reverse osmosis water purification system, including a module containing a semipermeable membrane and having an inlet port for receiving water to be purified and an outlet port at which purified product water is produced; means for supplying water to be purified to said inlet port comprising:

a pump having an inlet, and an outlet connected to said module inlet port;

a pump motor connected to said pump for activating said pump;

a thermally conductive tubing segment having an inlet for receiving water to be purified and an outlet connected to said inlet of said pump, said tubing segment being thermally connected to said pump motor so as to enable a transfer of thermal energy from said pump motor to said water to be purified, wherein said thermally conductive tubing segment comprises a coil of metallic tubing wrapped around said pump motor;

first and second substantially curved sheets of metal, each having a flange at each end of the curved portion thereof, said curved sheets being located on opposing sides of said pump motor and wrapped tubing assembly so as to enclose said assembly,

wherein opposing flanges of said curved sheets of metal are connected to each other so as to fixedly retain said coil of metallic tubing in thermal contact with said pump motor.

4,498,983

PRESSURE CUFF DRAW MODE ENHANCEMENT SYSTEM AND METHOD FOR A SINGLE NEEDLE BLOOD FRACTIONATION SYSTEM

Arnold C. Bilstad, Deerfield; John T. Foley, Wheeling, and Walker P. Woodworth, Vernon Hills, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 26, 1983, Ser. No. 498,583
Int. Cl.[3] A61M *5/00*
U.S. Cl. 210—97 **8 Claims**

1. A control system for a blood fractionation apparatus of the type which separates whole blood into cellular and noncellular components and utilizes a pressure cuff to increase whole blood collection rate, said system comprising:

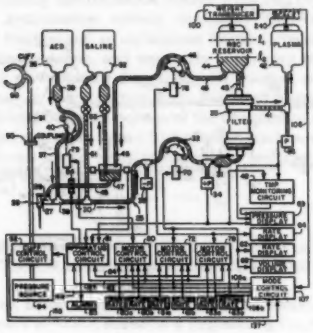
a first fluid reservoir for collecting the cellular component separated from the whole blood:

a second fluid reservoir for collecting the noncellular component separated from the whole blood;

means for monitoring the volume of the separated cellular component which is collected in said first fluid reservoir; and

control means operatively associated with said monitor means for depressurizing the pressure cuff and commencing the return of the separated cellular component from

said first fluid reservoir to the donor when the volume of the collected cellular component reaches a predetermined maximum level in said first fluid reservoir, and for pressurizing the pressure cuff and terminating the return of the



separated cellular component from said first fluid reservoir to the donor when the volume of the collected cellular component reaches a predetermined minimum level in said first fluid reservoir.

4,498,984

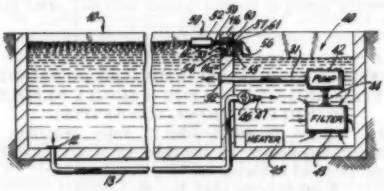
SWIMMING POOL APPARATUS

Andrew E. Colson, 22 Way Dr., Summit, N.J. 07901

Filed Jan. 30, 1980, Ser. No. 116,764

Int. Cl.[3] **C02F** *1/00*

U.S. Cl. 210—122 **4 Claims**



1. In combination in swimming pool apparatus, a primary swimming pool chamber, a secondary water chamber, skimmer means for passing surface water from said primary swimming pool chamber to said secondary chamber, wherein said skimmer means comprises a first pivotably mounted plate, a second pivotably mounted plate, and further horizontally disposed plate means pivotably connected to said first and second plates, means responsive to the water level in said primary swimming pool chamber for controlling the position of said first plate, drain and conduit means about the lower portion of said primary pool chamber for supplying water from said primary pool chamber to said secondary chamber, and cascaded filter means and pump means submerged in said secondary chamber for returning water passing through said filter means to said primary swimming pool chamber.

4,498,985

GROWTH OF BIOMASS

Bernard Atkinson, Copthorne; Geoffrey M. Black, Sale; Anthony Pinches, Offerton, and Paul J. S. Lewis, Abbots Langley, all of England, assignors to The University of Manchester Institute of Science and Technology and Simon-Hartley Limited, both of Stockport, England

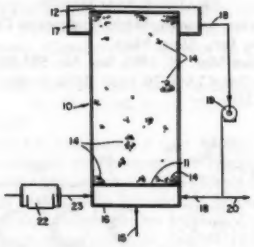
Continuation of Ser. No. 347,872, Feb. 11, 1982, Pat. No. 4,419,243, which is a continuation-in-part of Ser. No. 156,038, Jun. 3, 1980, abandoned, which is a division of Ser. No. 945,869, Sep. 26, 1978, abandoned. This application Jul. 13, 1983, Ser. No. 513,436

Claims priority, application United Kingdom, Oct. 20, 1977, 43613/77; Oct. 20, 1977, 43614/77; Oct. 20, 1977, 43615/77

The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.

Int. Cl.[3] **C02F** *3/10*

U.S. Cl. 210—151 **8 Claims**



1. Apparatus for promoting the growth of biomass from a supply of suitable liquid nutrient material, comprising: a reaction vessel adapted to contain the liquid nutrient; a biomass support medium contained within the vessel and formed as a plurality of movable bodies each having a substantially uniform reticular structure defining an internal voidage consisting of a multiplicity of interconnected pores such as to provide throughout the voidage of each body a protective environment which will permit biomass growth therewithin and thus support and sustain active biomass as a substantially integral mass retained by said reticular structure, the average pore size of said bodies lying in the range of 0.3 mm to 1 mm in diameter, said protective environment thereby permitting each body to fill with biomass over a period of time, there being an extensive area of access by way of a multiplicity of openings defined by said reticular structure at the external surface of each said body, to the whole of the voidage therein, the overall shape and reticular structure of each body being sufficiently plain as to enable the bodies to move relative to each other with a rubbing or knocking action without interlocking or packing together as a solid unit; a quantity of liquid nutrient material located within said reaction vessel; a quantity of biomass located within said reaction vessel; means for causing the liquid nutrient to flow through the vessel and thus contact and enter the bodies within the vessel; and means for causing relative movement of the bodies within the vessel sufficiently for restricting accumulation of biomass outwardly from the outer surface of each said body and thus preventing overfill of biomass onto the external surface of each said body.

4,498,986
VIBRATORY CONTAINER FOR FLOCCULATION OF THE WASTE WATER OBTAINED UPON VIBRATORY ABRASIVE FINISHING

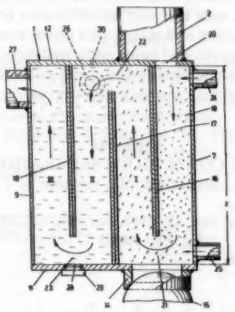
Karl Temme, Wuppertal; Klaus Beckschäfer, Kaarst, and Helmut Prüller, Haan, all of Fed. Rep. of Germany, assignors to Carl Kurt Walther GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 471,107

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3208113

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—199 **15 Claims**



1. In a vibratory container for the flocculation of waste liquids, having a feed connection which communicates with a feed channel extending into the inside of the container, the feed channel communicating in a siphon-like manner with a waste liquid outlet of a vibrational treatment device, said container being arranged to vibrate with said treatment device, the container having a connection for the addition of a flocculating agent, and a flocculated waste liquid outlet, the improvement comprising

at least one partition wall subdividing the inside of the container into a plurality of communicating chambers arranged downstream of the feed channel communicating the feed channel with said flocculated water liquid outlet to assure flocculation and prevent back-mixing as said waste liquid flows from said feed channel to said flocculated waste liquid outlet,

a plurality of connection means for communicating with upstream regions of said chambers, including

a first of said connection means for introduction of at least one flocculation preparation chemical into at least a first corresponding one of said chambers, and

a furthest downstream of said connection means being for the addition of the flocculating agent into at least an other one of said chambers.

4,498,987
MAGNETIC SEPARATOR

Morimitsu Inaba, Kamakura, Japan, assignor to Inabac Corporation and AMT Co., Ltd., both of Tokyo, Japan

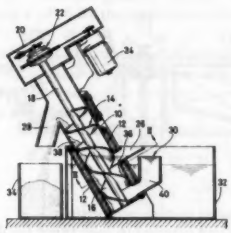
Filed Dec. 8, 1982, Ser. No. 447,758

Claims priority, application Japan, Dec. 16, 1981, 56-186400[U]

Int. Cl.³ B03C *1/10*

U.S. Cl. 210—222 **11 Claims**

1. A magnetic separator for at least separating magnetizable solid matter suspended in a fluid, which comprises a separating cylinder having a top end and a bottom end, a plurality of magnetic plates of a predetermined size arranged at an outer periphery of the cylinder and spaced apart from each other, said magnetic plates being arranged in a circle around said cylinder with each magnetic plate having an adjacent magnetic plate of opposite polarity located to one side of it and an adjacent magnetic plate of the same polarity located at its other side such that said magnetic plates are arranged in a north-north-south-south-north-north-south-south- . . . sequence to thereby generate a maximum magnetic flux to substantially the axial center of said cylinder means defining an inlet for a fluid suspension arranged at a middle part of the cylinder, means defining an outlet for a separated fluid arranged at the bottom end of the cylinder and means defining an outlet for the separated suspended matter arranged at the top end of the cylinder,



and a screw conveyor of a non-magnetic material within the cylinder and having a peripheral edge in engagement with an inner wall of the cylinder, said magnetic plates extending around said cylinder substantially along the entire longitudinal length of said cylinder from said bottom end near said fluid outlet to said fluid suspension inlet, and also from said inlet to said top end near said outlet for said separated suspended matter, whereby a strong magnetization of suspended matter is achieved.

4,498,988
SCRAPING MECHANISM

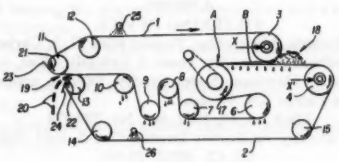
Kiyoshi Fujita, Kobe; Shirou Toyohisa, Daido; Osamu Katou, and Kenji Ishimaru, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Nov. 24, 1982, Ser. No. 444,067

Claims priority, application Japan, Nov. 25, 1981, 56-189825

Int. Cl.³ B01D *33/06*

U.S. Cl. 210—397 **4 Claims**



1. A scraping mechanism for scraping off deposit material from a surface of a moving body, comprising:

a scraper having a bladed edge at a fore end portion thereof;

means connected to said scraper for pressing said scraper against the surface of said moving body; and

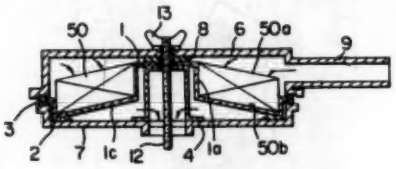
means operatively associated with said scraper for driving said scraper reciprocatingly on and along the surface of said moving body in parallel relation therewith, for detaching an entangling foreign material from said scraper and for restoring a normal scraping function to said scraper wherein said means for driving said scraper further comprises means for driving said scraper in a direction of travel of said moving body at a speed higher than said moving body and for then returning said scraper to an initial position.

4,498,989

FLUID FILTER ELEMENT AND SUPPORT

Susumu Miyakawa, Kariya; Toshiaki Fukuta; Hajime Akado, both of Anjo, and Yoshihiro Taki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 19, 1982, Ser. No. 350,147
Claims priority, application Japan, Feb. 23, 1981, 56-25140; Feb. 23, 1981, 56-25141; Feb. 25, 1981, 56-27242; Oct. 28, 1981, 56-172429; Oct. 28, 1981, 56-172430; Oct. 28, 1981, 56-172431
Int. Cl.³ B01D *27/06*
U.S. Cl. 210—450 10 Claims



1. A fluid cleaner system comprising:

a casing and a cap coupled to each other for defining therein a filter chamber; and

a filter unit disposed in said filter chamber having a filter element and a support device,

said filter element having two-dimensional wave forms and being formed of a trapezoidal or a sectorial filter sheet by folding the same along a plurality of folding lines parallel to a base line of said trapezoidal or sectorial filter sheet,

wherein said support device supports said filter element thereon and holds the same in said filter chamber, said support device comprises:

an inner frame having an inner annular groove for receiving therein the innermost peripheral portion of said filter element;

an outer frame having an outer annular groove for receiving the outermost peripheral portion of said filter element, said outer frame also having a circular flange extending radially outwardly from said outer annular groove and said circular flange being interposed between outer circular peripheral portions of said casing and cap; and

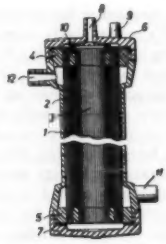
a plurality of webs connecting said inner and outer frames with each other and supporting the lower fold edges of said filter element thereby to prevent distortion of said element on down draft of fluid therethrough.

4,498,990

FILTERING DEVICE

Stanley Shaldon, Montpellier, France; Kjell H. I. Christopherson, Staffanstorp, Sweden; Thore E. Falkvall, Viken, Sweden, and Ulf K. Mattisson, Sodra Sandby, Sweden, assignors to Gambro Lundia AB, Sweden

Filed Jul. 19, 1982, Ser. No. 399,970
Claims priority, application Sweden, Oct. 5, 1981, 8105850
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—637 28 Claims



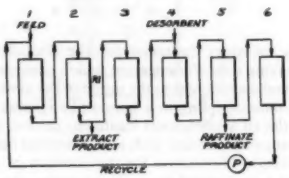
17. A filtering device for filtering blood fluids comprising an inlet for said blood fluid, filtration means for filtering said blood fluid to provide a filtered blood fluid and a filtrate, said filtration means comprising two chambers connected in series, and including membrane material comprising thin walled fibers in each of said chambers, wherein said filtration takes place, a first outlet for the filtrate, a second outlet for the filtered blood fluid, a pressure-sensitive valve between said inlet and said second outlet so that undesired pressure build-up beyond a predetermined pressure at said inlet results in at least some of said blood fluid passing directly from said inlet to said second outlet, and a casing comprising opposite first and second end walls, wherein said fibers are cast into said first and second end walls of said casing, said two opposite second end walls being covered by respective first and second outer covers bearing said inlet and said second outlet for said filtered blood fluid, said inlet and said second outlet being arranged in said first outer cover and being separated by a seal arranged between the adjoining first end wall and said first outer cover, said seal constituting a pressure-sensitive valve.

4,498,991

SERIAL FLOW CONTINUOUS SEPARATION PROCESS

Anil R. Oroskar, Brookfield, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 18, 1984, Ser. No. 622,031
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—659 6 Claims



1. A process for separating an extract component from a raffinate component contained in a feed mixture comprising the steps of:

(a) maintaining a unidirectional fluid flow system through a series of separating units in which said components have differential rates of travel due to selective retardation or acceleration of each of said components in each of said units, each of said units having a fluid inlet and a fluid outlet, said separating units being interconnected so as to achieve serial flow through said units in a single closed loop;

(b) mixing said feed mixture with the fluid emanating from one of said fluid outlets and passing the resultant first mixture into the next inlet downstream of said outlet in said series and mixing said displacement fluid with the fluid emanating from another of said fluid outlets and passing the resultant second mixture into the next inlet downstream of said other outlet in said series;

(c) establishing within said separating units a component concentration distribution, zones of which comprise, sequentially, progressing in the direction of fluid flow, extract and raffinate component mixture with the proportion of the raffinate component to extract component being greater than in the feed mixture, extract and raffinate component mixture with the proportion of extract component to raffinate component being greater than in the feed mixture, concentrated extract component, extract component diluted with displacement fluid, raffinate component diluted with displacement fluid, and concentrated raffinate component;

(d) withdrawing as an extract product stream a portion of at least one of the streams between an adjacent pair of separating units, and withdrawing as a raffinate product

stream a portion of at least one other of the streams between a different adjacent pair of separating units, the selection of the streams from which said product streams are withdrawn being consistent with the desired composition of each of said product streams;

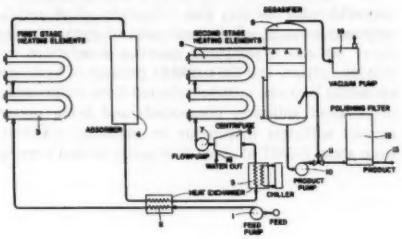
(e) periodically simultaneously advancing in an upstream direction with respect to fluid flow in said separating units, all of said inlets and outlets to effect the shifting of zones in a downstream direction with respect to said fluid flow, said shifting being effected prior to the progression through said units of said component concentration distribution to the extent that the composition of the inlet or outlet streams to or from any zone becomes inconsistent with the desired composition of that zone.

4,498,992

PROCESS FOR TREATING CONTAMINATED TRANSFORMER OIL

Luther W. Garrett, Jr., San Mateo, Calif., assignor to Petro-Williams Service Company, Tulsa, Okla.

Filed Feb. 9, 1984, Ser. No. 578,427
Int. Cl.³ B01D *15/00*
U.S. Cl. 210—664 **9 Claims**



1. A process for treating contaminated transformer oil which comprises the steps of heating the contaminated transformer oil in a first heater to a temperature in the range of 100° to 160° F.; passing the heated contaminated oil from the first heater through an adsorber containing an adsorbent capable of removing acidic compounds, other products of oxidation and colloidal contaminants from the contaminated oil; conducting the treated oil from the adsorber to a chiller where the temperature is reduced to about 50° to 70° F.; conducting the treated oil from the chiller to a centrifuge to remove free water; conducting the treated oil from the centrifuge to a second heater where the oil is heated to a temperature of about 100° to 160° F.; conducting the treated oil from the second heater to a degasifier wherein the oil is subjected to a high degree of vacuum; removing the treated oil from the degasifier and passing it through a polishing filter.

4,498,993

PROCESS FOR THE TREATMENT OF CLAY SLIMES

Carl F. Raba, Jr.; Robert L. Smith, and Francis Y. Huang, all of San Antonio, Tex., assignors to Monier Resources, Inc., San Antonio, Tex.

Division of Ser. No. 457,930, Jan. 14, 1983, Pat. No. 4,478,736. This application Jul. 16, 1984, Ser. No. 631,460
Int. Cl.³ C02F *1/56*
U.S. Cl. 210—710 **10 Claims**

1. A method for dewatering clay slimes diluted to less than 3% solid content comprising the following steps:

a. Hydrating fly ash for at least 7 days;

b. Reacting the hydrated fly ash with a silane coupling agent to couple the silane to the ash;

c. Polymerizing the fly ash with an acrylamide monomer to form an acrylamide flocculant chemically bonded to said fly ash through said silane;

d. adding an effective amount of the polymerized fly ash to flocculate said clay slime;

e. Allowing the flocculated slime to settle; and

f. Recovering the supernatant water.

9. A method according to claim 1 in which the clay slime is the waste product of a phosphate benefication process.

10. A method according to claim 9 comprising the following steps:

a. Hydrating fly ash for 7–21 days;

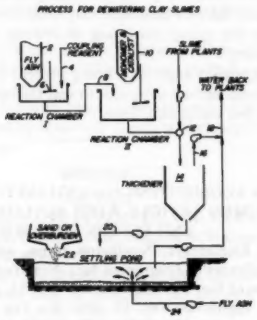
b. Charging the hydrated fly ash into a reactor containing 4 milliliters of water per gram of fly ash;

c. Maintaining a pH 6 by the addition of concentrated sulfuric acid;

d. Adding sufficient triacetoxyvinylsilane to produce a 0.075 to 0.05% by volume silane solution concentration;

e. Stirring the solution for 30 minutes;

f. Adding additional water;



g. Purging the contents of the reactor with nitrogen gas while adding 47.5 parts acrylamide monomer to 949.8 parts water and 0.144% by monomer weight of a stoichiometric amount of ammonium persulfate plus sodium sulfite;

h. Heating the mixture to 65° C. to polymerize the monomers and react with the fly ash;

i. Diluting the phosphate slime with deionized water to obtain a less than 3% solids concentration;

j. Charging the polymerized ash into a flow of diluted slime to flocculate slime particles;

k. Charging the mixture of slime and flocs into a mechanical thickeners;

l. Allowing the solids to consolidate and recovering the supernatant water;

m. Transporting the consolidated slimes to settling ponds; and

n. Adding sand to the settling pond to facilitate settlement of the slime.

4,498,994

HIGH TEMPERATURE STABLE DRILLING FLUIDS CONTAINING NON-AQUEOUS SOLVENTS

Israel J. Heilweil, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 31, 1982, Ser. No. 413,575
Int. Cl.³ C09K *7/06*; E21B *43/00*
U.S. Cl. 252—8.5 M **19 Claims**

1. A solids free completion fluid for use in drilling a bore hole with a drill bit, wherein said drill bit is in the vicinity of an oil or gas producing formation, said completion fluid consisting essentially of

(i) a solvent, said solvent comprising at least about 90% by weight of N-methyl-2-pyrrolidone, the remainder of said solvent being essentially water;

(ii) a density increasing salt dissolved in said solvent in an

amount sufficient to increase the density of said fluid in order to balance the formation pressure; and

(iii) a viscosity increasing amount of polyvinylpyrrolidone polymers having at least 50 mole percent of vinylpyrrolidone repeating units.

4,498,995

LOST CIRCULATION DRILLING FLUID

Judith Gockel, 15511 Baldswelle, Tomball, Tex. 77375

Division of Ser. No. 291,261, Aug. 10, 1981, Pat. No. 4,460,052. This application Jul. 1, 1983, Ser. No. 510,413

Int. Cl.³ C09K *7/04;* **E21B** *33/138*

U.S. Cl. 252—8.5 LC **9 Claims**

1. A drilling fluid for sealing a lost circulation zone penetrated by a well bore comprising

a slurry of at least one particulate expanded aggregate selected from the group consisting of expanded clay, expanded slate or expanded clay shale in a material selected from the group consisting of drilling muds and cement slurries,

said expanded aggregate being present in said slurry in a selected amount sufficient to seal the openings or pores in said lost circulation zone.

4,498,996

USE IN AUGMENTING OR ENHANCING AROMA OF PERFUMED ARTICLE WITH ACYLOXY ALKANOLS AND ESTERS THEREOF

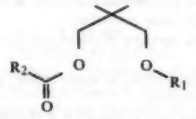
Philip T. Klemarczyk, Newington, Conn., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 396,487, Jul. 8, 1982, abandoned. This application Oct. 12, 1983, Ser. No. 541,266

Int. Cl.³ C11D *3/50;* **D06M** *13/20*

U.S. Cl. 252—8.6 **3 Claims**

1. A process for augmenting or enhancing the aroma of a perfumed article selected from the group consisting of solid or liquid anionic, cationic, nonionic or zwitterionic detergents and fabric softener compositions and dryer added fabric softener articles comprising the step of adding to said perfumed article an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein R_1 is hydrogen or acetyl and R_2 is isopropyl.

4,498,997

METHOD AND COMPOSITION FOR ACIDIZING SUBTERRANEAN FORMATIONS

Michael L. Walker, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

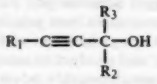
Filed Jun. 24, 1983, Ser. No. 507,388

Int. Cl.³ E21B *43/27*

U.S. Cl. 252—8.55 C **15 Claims**

1. A method of acidizing a subterranean formation penetrated by a ferrous metal well bore whereby corrosive effects of an acidic solution on ferrous metals in contact with said acidic solution is minimized which comprises:

contacting said formation with an aqueous acidic solution comprising hydrochloric acid, which contains a corrosion inhibitor composition consisting essentially of a corrosion-reducing effective amount of at least one acetylenic alcohol having the general formula:



wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen, alkyl, phenyl, substituted phenyl and hydroxyalkyl radicals present in an amount sufficient to comprise at least about 5 percent by volume of said inhibitor composition, a quaternary ammonium compound selected from the group consisting of the N-methyl, N-benzyl and chloromethyl naphthalene quaternaries of alkyl pyridines and quinoline, isoquinoline compounds, benzoquinoline compounds and mixtures thereof, an aromatic hydrocarbon compound which exhibits high oil-wetting characteristics present in an amount sufficient to provide a ratio by volume of acetylenic alcohol to aromatic hydrocarbon of at least about 0.05:1 and an antimony compound which is activated by the other constituents of said corrosion inhibitor composition to reduce the corrosive effect of said acidic solution on said ferrous metal, said antimony compound being at least one member selected from the group consisting of antimony trioxide, pentoxide, trichloride, sulfide, pentachloride, tartrate, and trifluoride, alkali metal salts of antimony tartrate, alkali metal salts of pyroantimonate, antimony adducts of ethylene glycol and solutions containing ethylene glycol, and the oxidized product of hydrogen peroxide and at least one member selected from the group consisting of trivalent antimony compounds and being present in an amount sufficient to provide an antimony concentration of from about 0.0007 to about 0.04 molar to said corrosive acid.

4,498,998

STABILIZATION OF HYDROCRACKED OILS AGAINST UV-LIGHT DEGRADATION WITH CERTAIN DIHYDROXY COMPONENTS

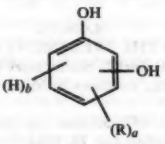
David A. Hutchison, Munster, Ind., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 210,427, Nov. 25, 1980, abandoned. This application May 6, 1982, Ser. No. 375,522

Int. Cl.³ C10M *1/20*

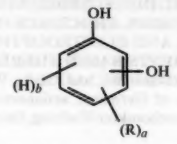
U.S. Cl. 252—52 R **13 Claims**

1. A composition of matter comprising a major amount by weight of hydrocracked lubricating oil having susceptibility to deterioration by sunlight and a minor amount by weight, sufficient to inhibit said composition from deterioration caused by sunlight, of at least one added dihydroxy component having a structure



wherein each R is independently selected from the group consisting of tertiary alkyl radicals containing up to about 10 carbon atoms, and a and b are integers such that a is equal to at least 2 and the sum of a plus b equals 4.

8. A method of inhibiting a hydrocracked lubricating oil from deterioration caused by sunlight comprising combining with said oil having susceptibility to deterioration by sunlight an inhibiting amount of at least one dihydroxy component having a structure



wherein each R is independently selected from the group consisting of tertiary alkyl radicals containing up to about 10 carbon atoms, and a and b are integers such that a is equal to at least 2 and the sum of a plus b equals 4.

4,498,999

PROCESS FOR THE HEATING AND/OR THERMAL CONDITIONING OF A BUILDING BY MEANS OF A HEAT PUMP OPERATED WITH A SPECIFIC MIXTURE OF WORKING FLUIDS

Claude Ramet, Paris, and Alexandre Rojey, Garches, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

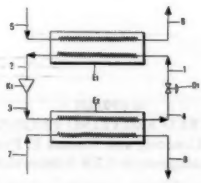
Continuation-in-part of Ser. No. 381,903, May 25, 1982,. This application Nov. 2, 1982, Ser. No. 438,424

Claims priority, application France, Oct. 19, 1981, 8119734

The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.

Int. Cl.³ C09L *5/04*

U.S. Cl. 252—67 **7 Claims**



1. A composition consisting essentially of a non-azeotropic mixture of:

(a) a major component of monochlorodi-fluoromethane (R_{22}) with

(b) a minor component of the trifluoromethane (R_{23}).

4,499,000

POWER-TRANSMISSION METHOD USES SPIROCYCLIC KETALS

Karl-Heinz Hentschel; Rolf Dhein, both of Krefeld; Hans Winter, and Herbert Vojacek, both of Munich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

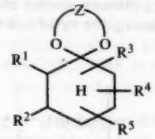
Continuation of Ser. No. 294,695, Aug. 20, 1981, abandoned. This application Feb. 18, 1983, Ser. No. 467,991

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1980, 3033658

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—73 **9 Claims**

1. A method of transmitting torque or tractional forces from a tractional driving element to a driven element through a traction fluid comprising using as said fluid a composition comprising a spirocyclic ketal of the formula (I)



in which

R^1 in the case where R^2 denotes hydrogen, represents a cyclohexyl radical optionally substituted by lower alkyl, lower alkoxy and/or cycloalkyl with 5 to 7 carbon atoms, or in which

R^1 and R^2 are linked through 4 methylene groups, which are optionally substituted by lower alkyl, lower alkoxy and-/or cycloalkyl with 5 to 7 carbon atoms and form a further acyclic ring;

R^3, R^4 and R^5 are identical or different and denote hydrogen, lower alkyl, lower alkoxy or cycloalkyl with 5 to 7 carbon atoms, and

Z denotes alkylene with 2 to 4 carbon atoms which is optionally substituted by lower alkyl and/or cycloalkyl with 5 to 7 carbon atoms.

4,499,001

CONTROLLED FADE EFFERVESCING CLEANSER

Anthony B. J. Eoga, Boonton, N.J., assignor to Warner-Lamberf Company, Morris Plains, N.J.

Continuation of Ser. No. 251,030, Apr. 3, 1981, abandoned. This application Mar. 2, 1984, Ser. No. 585,654

Int. Cl.³ C11D *3/40, 7/10, 7/12, 7/18*

U.S. Cl. 252—99 **16 Claims**

1. An effervescent cleansing composition comprising:

(a) an oxidizing agent comprising a monopersulfate salt in an amount of from 35 to 60% by weight;

(b) a bleaching promoter comprising an alkali metal or alkaline earth metal chloride in an amount of 10% to 20% by weight;

(c) an effervescence promoting compound comprising a perborate salt, in an amount of from 0.5% to 20% by weight;

(d) sodium carbonate in an amount of from 20% to 40% by weight;

(e) sodium hydroxide in an amount of up to about 0.5% by weight;

(f) a colorant, comprising at least one food, drug and cosmetic grade, or drug and cosmetic grade dye or lake, in an amount of from about 0.15% to 0.5% by weight; and,

(g) a fade control agent comprising a compound selected from the group consisting of alkali metal bromides, alkali metal iodides and mixtures thereof, in an amount of from 0.04% to 0.3% by weight to control the time in which the colorant disappears.

4,499,002

SCALE INHIBITING COPOLYMER

William F. Masler, III, Hinckley, and Zahid Amjad, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

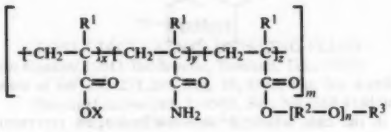
Filed Jun. 28, 1983, Ser. No. 508,636

Int. Cl.³ C02F *5/12;* **C08F** *220/06, 220/56*

U.S. Cl. 252—180 **6 Claims**

1. A composition for treating a predominantly aqueous stream to inhibit the deposition of precipitates selected from the group consisting of calcium phosphate, magnesium phosphate, zinc phosphate, calcium silicate, magnesium silicate, magnesium hydroxide, zinc hydroxide, iron oxide and mixtures thereof, said composition comprising an effective amount for

the purpose, of a water-soluble essentially non-crosslinked random copolymer consisting essentially of a copolymer of acrylic acid or methacrylic acid, acrylamide or methacrylamide, and an alkoxylated primary alcohol ester of (meth)acrylic acid, the copolymer having the structural formula



wherein

X represents H, or NH_4, or an alkali metal selected from the group consisting of sodium and potassium;

R^1 represents H, or methyl;

R^2 represents alkyl having from 2 to about 4 carbon atoms;

R^3 represents alkyl having from 1 to about 10 carbon atoms;

n is an integer in the range from 2 to about 6;

m is an integer in the range from about 3 to about 70; and,

for each y (that is, y=1) x is an integer in the range from about 1 to about 8, and z is a number in the range from 1 to about 0.075; and x, y and z are present in relative heterogeneous order.

4,499,003

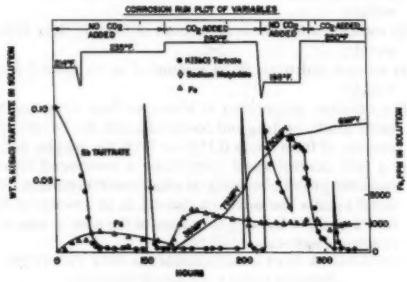
ANTIMONY-MOLYBDENUM SALT CORROSION INHIBITOR COMPOSITION

Z. Andrew Foroulis, Mendham, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 2, 1982, Ser. No. 344,986

Int. Cl.³ C23F *11/06, 11/18*

U.S. Cl. 252—192 **15 Claims**



1. A composition for preventing corrosion of metals in contact with alkaline liquid-acid gas scrubbing systems comprising an aqueous solution of soluble salts of antimony and molybdenum wherein the weight ratio of antimony salt to molybdenum salt ranges between about 0.05 to 1 and about 0.2 to 1.

8. A composition for use within an acid gas scrubbing system comprising an aqueous-alkaline solution containing an effective amount of corrosion inhibiting agent, wherein said agent comprises soluble salts of antimony and molybdenum, wherein the weight ratio of antimony salt to molydenum salt ranges between about 0.01 to 1 and about 5 to 1.

4,499,004

LIQUID CRYSTAL DIELECTRICS, NEW DYESTUFFS USEFUL THEREIN, PROCESSES FOR THEIR PREPARATION, AND ELECTROOPTICAL DISPLAY ELEMENTS BASED THEREON

Günther Haas, Neckargemünd, and Georg Weber, Erzhausen, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

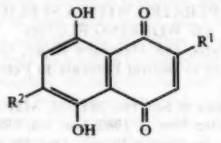
Filed Jan. 28, 1983, Ser. No. 462,153

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202761

Int. Cl.³ G02F *1/13;* C09K *3/34*

U.S. Cl. 252—299.1 **11 Claims**

1. A liquid crystal dielectric comprising at least one liquid crystalline compound and at least one dyestuff of the formula



wherein R^1 and R^2 are identical or different and each is alkyl or alkoxy each of 3 to 8 C atoms or a group Z—Y—, or one of R^1 and R^2 can also be hydrogen, methyl, ethyl, methoxy or ethoxy; Z is R—Ph—, R—Ph—Ph—, R—Cy—, R—Cy—Cy—, R—Cy—Ph— or R—Ph—Cy; Ph is 1,4-phenylene; Cy is 1,4-cyclohexylene; Y is —CH_2—, —O—, —S—, —NH—, —CH_2CH_2—, —Ch_2—O—, —CH_2—S—, —CH_2—NH— or a direct bond; and R is hydrogen or alkyl or alkoxy, each of 1–8 C atoms.

4,499,005

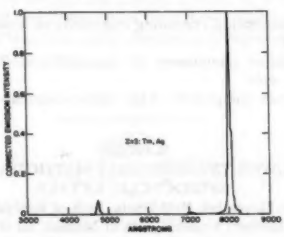
INFRARED EMITTING PHOSPHOR

James R. McColl, Concord, and Thomas E. Peters, Chelmsford, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 30, 1984, Ser. No. 605,358

Int. Cl.³ C09K *11/06*

U.S. Cl. 252—301.6 S **3 Claims**



1. A luminescent composition comprising thulium and silver coactivated zinc sulfide having the approximate formula

$$ZnS:Tm_xAg_y$$

wherein

x is from about 100 to about 1000 atomic parts per million,

y is from about 10 to about 100 atomic parts per million.

4,499,006

CORROSION INHIBITORS

Frederick W. Valone, and Joseph Rutledge, both of Houston, Tex.

Filed Jun. 6, 1983, Ser. No. 501,674
Int. Cl.[3] C23F *11/00*
U.S. Cl. 252—392 18 Claims

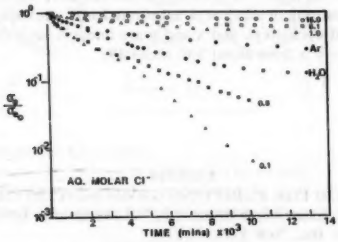
1. A corrosion inhibition solution comprising:
A. water, and
B. 10 ppm to 1,000 ppm of a composition comprising the reaction product of:
1. an amine mixture comprising:
a 0.8:1 to 1:0.8 mixture of a poly(oxyethylene)diamine of molecular weight from 500 to 700 and a poly(oxypropylene)triamine of molecular weight from 300 to 500, and
2. an organic monomer acid mixture comprising:
a 0.8:1 to 1:0.8 mixture of a petroleum wax oxidate and a fatty acid.

4,499,007

STABILIZATION OF CONDUCTIVE POLYMERS IN AQUEOUS ENVIRONMENTS

Anthony Guiseppi-Elie, Cambridge, and Gary E. Wnek, Natick, both of Mass., assignors to Massachusetts Institute of Technology, Cambrige, Mass.

Filed Dec. 13, 1982, Ser. No. 449,028
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—500 4 Claims



1. A method of stabilizing iodine-doped, conductive polyacetylene in a deaerated aqueous solution comprising the step of introducing into the aqueous solution a source of chloride ions to produce a chloride ion concentration greater than 0.5 molar.

4,499,008

METHOD OF MAKING STABLE ELECTRICALLY CONDUCTING POLYMERS

Stephen T. Wellinghoff; Samson A. Jenekhe, both of Minneapolis, and Thomas J. Kedrowski, St. Paul, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 420,757, Sep. 21, 1982, Pat. No. 4,452,725.
This application Dec. 9, 1983, Ser. No. 559,990
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—500 16 Claims

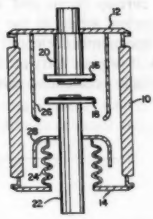
1. A method of making an electrically conducting polymer comprising the steps of:
preparing a first liquid solution comprising a Grignard reagent of a quantity of monomer selected from the group consisting of N-methyl-3',3 dibromocarbazole and N-ethyl-3',3 dibromocarbazole or a combination thereof;
preparing a second liquid solution of the remainder of the monomer;
polymerizing a mixture of said first and said second solution in the presence of a suitable catalyst in an atmosphere inert to the reactants and products for sufficient time to produce a high molecular weight polymer;
recovering said polymer; and
complexing said polymer with a compatible charge transfer acceptor dopant wherein said charge transfer acceptor is selected from the group consisting of I_2, Br_2, Cl_2, F_2, TCNQ, DDQ, $NO^+BF_4^-$, chloranil and protic acids selected from the group consisting of HI, HBr HCl, HF, H_2SO_4, $HClO_4$, and CCl_3COOH, or a combination thereof.

4,499,009

ELECTRODE COMPOSITION FOR VACUUM SWITCH

Takashi Yamanaka, Itami; Yasushi Takeya, Osaka; Mitsumasa Yorita, Itami; Toshiaki Horiuchi, Settsu; Kouichi Inagaki, Itami; Eizo Naya, Ibaraki; Michinosuke Demizu, Takarazuka, and Mitsuhiro Okumura, Sakai, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,324
Claims priority, application Japan, Dec. 21, 1981, 56-208687
Int. Cl.[3] H01B *1/02*
U.S. Cl. 252—512 1 Claim



1. An electrode composition for a vacuum switch which consists essentially of:
(a) not more than 20% by weight of at least one low melting point metal selected from the group consisting of bismuth (Bi), lead (Pb), indium (In), lithium (Li), tin (Sn) and alloys thereof;
(b) not more than 10% by weight of a metal capable of forming an alloy with said low melting point metal at a temperature not less than the melting point of said low melting point metal, and being alloyable with copper at a temperature not higher than the melting point of said alloy, selected from the group consisting of tellurium (Te), antimony (Sb), lanthanum (La), magnesium (Mg) and alloys thereof;
(c) less than 40% by weight of at least one refractory metal selected from the group consisting of chromium (Cr), iron (Fe), cobalt (Co), nickel (Ni), titanium (Ti), tungsten (W) and alloys thereof; and
(d) the balance being copper (Cu).

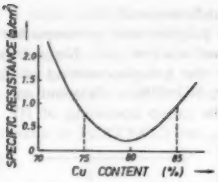
4,499,010

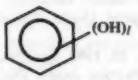
CONDUCTIVE PAINT

Katsumi Tanino, Takaoka; Satoshi Fujiki, Toyama, and Shinzi Okamoto, Ohwawano, all of Japan, assignors to Toyama Prefecture, Toyama and Hokuriku Electric Industry Co., Ltd., Kaminiikawa, both of, Japan

Continuation-in-part of Ser. No. 300,879, Sep. 11, 1981, abandoned. This application Mar. 2, 1983, Ser. No. 471,924
Claims priority, application Japan, Sep. 19, 1980, 55-129115; Nov. 5, 1980, 55-154703; Jan. 29, 1981, 56-10843
Int. Cl.[3] H01B *1/02*
U.S. Cl. 252—512 11 Claims

1. A conductive paint comprising an organic solvent, a binder composition comprising a thermosetting resin and a hydroquinone derivative obtained by reacting a hydroquinone represented by the formula:





wherein, l denotes an integer of 2 or 3, with one member selected from the group consisting of saturated fatty acids having 10 to 20 carbon atoms and unsaturated fatty acids having 10 to 20 carbon atoms in the presence of a catalytic amount of at least one member selected from the group consisting of copper salts of organic fatty acids and fine copper powder, and an electrically conductive metal powder.

4,499,011

RESISTANCE PASTE FOR A RESISTOR BODY

Alexander H. Boonstra; Cornelis A. H. A. Mutsaers, and Franciscus N. G. R. van der Kruijs, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1984, Ser. No. 607,905

Claims priority, application Netherlands, May 9, 1983, 8301631

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—518 **5 Claims**

1. A resistance paste for a resistor body consisting of a mixture of a metal oxidic compound, a permanent binder and a temporary binder, characterized in that the metal oxidic compound satisfies the formula:

$$Pb_2Rh_xRu_{2-x}O_{7-y}$$

wherein $0.15 \leqq x \leqq 0.95$ and $0 \leqq y \leqq \frac{1}{2}$.

4,499,012

PERFUME DISPENSING MATERIAL

Geoffrey Farrell, Crewe, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed May 7, 1982, Ser. No. 376,168

Claims priority, application United Kingdom, May 8, 1981, 8114055; Sep. 28, 1981, 8129168

Int. Cl.³ C11B *9/00*

U.S. Cl. 252—522 A **4 Claims**

1. A perfume dispensing material which comprises granules having a granule size of over 1000 microns, of vermiculite impregnated with one or more perfume oils, at least 10% of the weight of the material being perfume oil.

4,499,013

ELECTRICAL TREE AND WATER TREE RESISTANT COMPOUNDS AND POLYMER COMPOSITIONS CONTAINING THE SAME

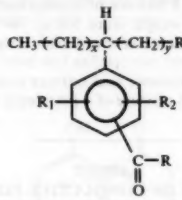
Anthony Barlow; Irwin S. Schlossman, and Robert E. Borgerding, all of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 17, 1983, Ser. No. 524,003

Int. Cl.³ H01B *3/18*

U.S. Cl. 252—567 **13 Claims**

1. A compound having the general structure:



wherein R is a hydrocarbon radical having from 1 to 18 carbon atoms selected from the group consisting of alkyl, aryl, substituted aryl, cycloalkyl and substituted cycloalkyl, R_1 and R_2 are independently selected from the group consisting of hydrogen and C_1–C_{18} alkyl, R_3 is selected from the group consisting of COOH, $COOR_4$ and CH_2OH, wherein R_4 is a hydrocarbon radical having from 1 to 18 carbon atoms and selected from the group consisting of alkyl, aryl, substituted aryl, cycloalkyl and substituted cycloalkyl, and x and y are integers such that the total of x+y is from about 5 to about 19.

4,499,014

METHOD FOR PURIFYING GAMMA-INTERFERON

Leonard F. Estis, North Brunswick, N.J., assignor to Interferon Sciences, Inc., New York, N.Y.

Filed Feb. 7, 1984, Ser. No. 577,908

Int. Cl.³ A61K *45/02*; C07G *7/00*

U.S. Cl. 260—112 R **13 Claims**

1. A method for purifying gamma-interferon comprising the steps of:

(a) preparing one or more antibodies to gamma-interferon;

(b) immobilizing the one or more antibodies on a solid support;

(c) contacting a first solution containing gamma-interferon with the one or more immobilized antibodies so as to form immobilized antibody-antigen complexes between the gamma-interferon and the one or more immobilized antibodies;

(d) separating the first solution from the immobilized antibody-antigen complexes;

(e) contacting the immobilized antibody-antigen complexes with a second solution having an acidic pH so as to disassociate the gamma-interferon from the one or more immobilized antibodies and into the second solution, the acidity of said second solution having the effect of partially or completely deactivating the diassociated gamma-interferon;

(f) separating the second solution from the one or more immobilized antibodies; and

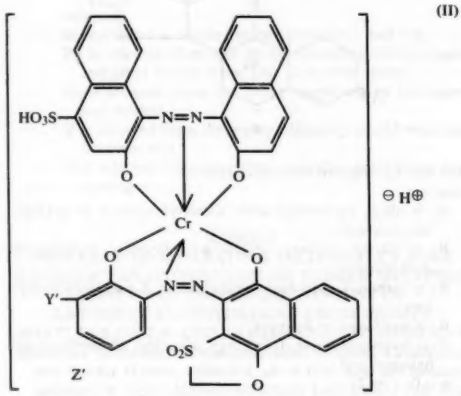
(g) restoring some or all of the activity of the gamma-interferon in the second solution by adjusting the pH of that solution to between about 5.5 and 9.5 and then incubating the pH adjusted solution at a temperature of between about 2° C. and 8° C. for a period of at least 24 hours.

4,499,015
CHROMIUM COMPLEX AZO DYESTUFFS AND MIXTURES OF CHROMIUM COMPLEX AZO DYESTUFFS DERIVATED FROM 1-AMINO-2-HYDROXYNAPHTALENE-4-SULPHONIC ACIDS OR AMINOPHENOLS

Walter Scholl, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 6, 1982, Ser. No. 405,969
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133569
Int. Cl.[3] C09B *45/16;* D06P *1/10, 3/04, 3/14*
U.S. Cl. 534—697 3 Claims

1. Chromium complex dyestuff of the formula



(II)

wherein

Y' denotes H, Cl or NO_2,

Z' denotes H, NO_2 or $SO_2NW'_1W'_2$ or Cl and

W'_1 and W'_2 denwith the proviso that

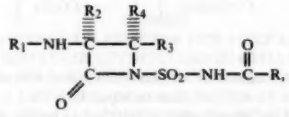
Y' and Z' do not simultaneously denote NO_2.

4,499,016
2-OXO-1-[(ACYLAMINO)SULFONYL]AZETIDINES

Hermann Breuer, Schoenhofen; Theodor Denzel, and Uwe D. Treuner, both of Regensburg, all of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 6, 1981, Ser. No. 290,648
Int. Cl.[3] C07D *205/08, 417/12;* A61K *31/425, 31/395*
U.S. Cl. 260—239 A 7 Claims

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein

R is alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, alkoxy, phenyloxy, (substituted phenyl)oxy, phenylalkoxy, or (substituted phenyl)alkoxy;

R_1 is an acyl group derived from a carboxylic acid;

R_2 is hydrogen or methoxy;

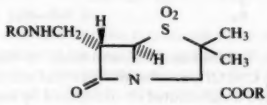
R_3 and R_4 are the same or different and each is hydrogen or alkyl; wherein the term "substituted phenyl" refers to a phenyl group substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or carboxyl groups.

4,499,017
BETA-LACTAMASE INHIBITING 6-(ALKOXYAMINO-METHYL) PENICILLANIC ACID 1,1-DIOXIDE AND DERIVATIVES

Donald K. Pirie, Uncasville; Robert A. Volkmann, Ledyard, and Edward F. Kleinman, Groton, all of Conn., assignors to Pfizer Inc., New York, N.Y.

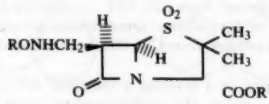
Filed Jun. 6, 1983, Ser. No. 501,475
Int. Cl.[3] C07D *499/00;* A61K *31/415*
U.S. Cl. 260—245.2 R 28 Claims

1. A compound having the formula



(I)

or



(II)

wherein R is (C_1–C_4) alkyl or benzyl; and R^1 is hydrogen or a conventional ester forming radical which is hydrolyzable under physiological conditions selected from the group consisting of:

gamma-butyrolacton-4-yl,

—CHR^2OCOR^3, or

—CHR^2OCOOR^3,

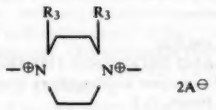
wherein R^2 is hydrogen or methyl and R^3 is (C_1–C_6)alkyl; or a pharmaceutically acceptable cationic salt thereof when R^1 is hydrogen.

4,499,018
POLYPHTHALOCYANINE COMPOUNDS USEFUL AS DYESTUFFS

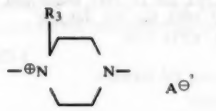
Jacky Doré, Basel, and Helmut Moser, Oberwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 394,400, Jul. 2, 1982, abandoned. This application Oct. 15, 1982, Ser. No. 434,470
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126458; Jan. 9, 1982, 3200455
Int. Cl.[3] C09B *47/30, 47/32*
U.S. Cl. 260—245.81 18 Claims

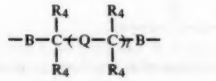
1. A cationic phthalocyanine dyestuff in which at least two phthalocyanine groups, which may be metallized or unmetallized, are joined by a group —CH_2—R—CH_2— wherein R is a group of one of the formulae (a) to (d)



(a)

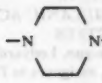


(b)



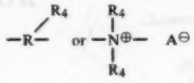
(c)

-continued



(d)

where each B independently is



R_3 is C_{1-10}alkyl, unsubstituted or substituted by one group selected from CN, OH, unsubstituted phenyl and halogen; or C_{2-10}alkenyl, unsubstituted or substituted by one group selected from CN, OH, unsubstituted phenyl and halogen;

R_4 is hydrogen, C_{1-10}alkyl unsubstituted or substituted by one group selected from CN, OH, unsubstituted phenyl and halogen; or C_{2-10}alkenyl unsubstituted or substituted by one group selected from CN, OH, unsubstituted phenyl and halogen;

Q is a direct bond or a bridging group; and $A^{\ominus}$ is a non-chromophoric anion, the phthalocyanine groups being attached to the methylene moieties of the group —CH$_2$—R—CH$_2$—.

4,499,019

N-(1-ALLYL-2-PYRROLIDYLMETHYL)-2,3-DIMETHOXY-5-SULFAMOYLBENZAMIDE AND DERIVATIVES THEREOF AND METHOD FOR TREATING HOT FLUSHES ASSOCIATED WITH NATURAL OR SURGICAL MENOPAUSE

Michel L. Thominet, and Jacques J. Perrot, both of Paris, France, assignors to Societe D'Etudes Scientifiques et Industrielles de l'Ile de France, Paris, France

Continuation of Ser. No. 265,017, May 19, 1981, abandoned, which is a continuation of Ser. No. 82,510, Oct. 9, 1979, abandoned, which is a continuation of Ser. No. 928,028, Jul. 25, 1978, abandoned, which is a continuation of Ser. No. 815,756, Jul. 14, 1977, abandoned. This application Oct. 13, 1983, Ser. No. 540,918

Claims priority, application France, Jul. 19, 1976, 76 22180

Int. Cl.^{3} A61K *31/40*

U.S. Cl. 514—428 **12 Claims**

1. A method for treating hot flushes associated with natural or surgical menopause comprising administering to a patient suffering from said hot flushes a therapeutically effective amount, sufficient to reduce or eliminate symptoms of said hot flushes of a compound selected from the group consisting of N-(1'-allyl-2'-pyrrolidylmethyl)-2,3-dimethoxy-5-sulfamoyl-benzamide and derivatives of said N-(1'-allyl-2'-pyrrolidylmethyl)-2,3-dimethoxy-5-sulfamoyl-benzamide.

4,499,020

MIXED ANHYDRIDES AND PROCESSES THEREOF

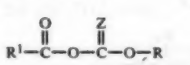
Iraj Lalezari, Scarsdale, N.Y., assignor to Montefiore Hospital and Medical Center, Inc., Bronx, N.Y.

Continuation of Ser. No. 285,252, Jul. 21, 1981, abandoned. This application Feb. 22, 1983, Ser. No. 468,050

Int. Cl.^{3} C07J *7/00*

U.S. Cl. 260—397.1 **3 Claims**

1. A mixed anhydride having the formula:



wherein Z is oxygen, R^1 is a residue of deoxycholic acid and R is ethyl.

4,499,021

17β(SUBSTITUTED THIO)-16-KETOANDROSTENE-17α,-CARBOXYLIC ACID DERIVATIVES

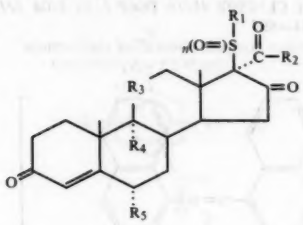
Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 12, 1984, Ser. No. 599,374

Int. Cl.^{3} C07J *7/00*

U.S. Cl. 260—397.1 **20 Claims**

1. A steroid having the formula



and the 1,2-dehydro derivative thereof

wherein

R_1 is alkyl, cycloalkyl, aryl, alkanoyloxyalkyl or arylcarbonyloxyalkyl;

R_2 is alkoxy, aryloxy, arylalkoxy, alkylthio, arylthio, or dialkylamino;

R_3 is carbonyl, β-hydroxymethylene or β-acetyloxymethylene;

R_4 is hydrogen or halogen;

R_5 is hydrogen, methyl, hydroxy, alkanoyl, alkanoyloxy, or halogen; and

n is 0, 1 or 2.

4,499,022

ORGANOMETALLIC TELOMERS, METHODS OF PREPARATION AND BIOCIDAL COMPOSITIONS OBTAINED

Alain Battais; Bernard J. L. Boutevin, and Yves J. D. Pietrasanta, all of Montpellier, France, assignors to Etat Francais, Paris Armees, France

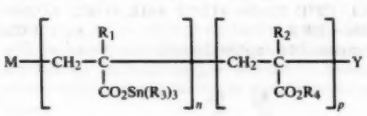
Filed Jun. 29, 1982, Ser. No. 393,413

Claims priority, application France, Jul. 3, 1981, 81 13080

Int. Cl.^{3} C07F *7/22*

U.S. Cl. 260—429.7 **4 Claims**

1. A biocidal organometallic telomer of the formula (I):



(I)

wherein,

n and p represent numbers between 1 and 100 wherein the ratio is n/(n+p) less than or equal to 0.75;

R_1 and R_2 are independently selected from the group consisting of hydrogen and methyl;

R_3 is selected from the group consisting of substituted and unsubstituted linear and branched chain alkyl having from 1 to 12 carbon atoms and substituted and unsubstituted phenyl;

R_4 is selected from the group consisting of substituted and unsubstituted linear and branched chain alkyl having from 1 to 12 carbon atoms, substituted and unsubstituted phenyl and hydrogen;

M and Y are derived from a transfer agent, wherein:

Y is selected from the group consisting of hydrogen, chlorine and bromine; and

M is an electroattractive organic group selected from the group consisting of CCl_3, SR_5, $PO(OR_5)_2$, $P(R_5)_2$, $CCl_2CO_2R_5$,

$$CCl_2(CH_2\underset{\displaystyle CO_2R_5}{\underset{|}{C}}R_6)_mCl,\quad CCl_2(CH_2\underset{\displaystyle CN}{\underset{|}{C}}H)_mCl,\quad CCl_2(CH_2\underset{\displaystyle C_6H_5}{\underset{|}{C}}H)_mX,$$

$CCl_2(CH_2CHCl)_mX$, $CCl_2(CH_2CCl_2)_mCl$, $CCl_2(CF_2CFZ)_mX$ and

$$CCl_2(CH_2\underset{\displaystyle R_6}{\underset{|}{C}}{=}CHCH_2)_mX;$$

wherein,

m represents a whole number between 1 and 100,

R_5 is selected from the group consisting of hydrogen and alkyl having from 1 to 12 carbon atoms,

R_6 is selected from the group consisting of hydrogen and methyl,

Z is selected from the group consisting of chlorine and fluorine, and

X is selected from the group consisting of chlorine and hydrogen.

4,499,023

PROCESS FOR SEPARATING TECHNICALLY PURE 2,4-DIISOCYANATOTOLUENE OR ISOMER MIXTURES HAVING AN INCREASED CONTENT OF 2,4-DIISOCYANATOTOLUENE FROM ISOMER MIXTURES OF 2,4- AND 2,6-DIISOCYANATOTOLUENE

Alexander Mitrowsky, Dormagen; Adolf Wissner, Leverkusen, and Werner Hauser, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 493,869

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220439

Int. Cl.[3] **C07C** *71/00*

U.S. Cl. 260—453 SP **5 Claims**

1. A process for separating pure 2,4-diisocyanatotoluene or an isomer mixture having an increased 2,4-diisocyanatotoluene content from an isomer mixture of 2,4- and 2,6-diisocyanatotoluene in a tube crystallizer comprising:

(a) cooling the isomer mixture of 2,4- and 2,6-diisocyanatotoluene to a temperature of from 4° to 9° C.,

(b) further cooling the isomer mixture of (a) to between −2° and −6° C. at a rate of 0.5° to 3° C. per hour,

(c) maintaining the mixture of (b) at a temperature of from −2° to −6° C. for at least 30 minutes,

(d) removing any liquid present in the mixture of (c), and

(e) melting any solid remaining in the tube crystallizer.

4,499,024

CONTINUOUS PROCESS FOR PREPARING BISFLUOROXYDIFLUOROMETHANE

Michael J. Fifolt, Grand Island, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 24, 1983, Ser. No. 545,021

Int. Cl.[3] **C07C** *71/00*

U.S. Cl. 260—453 R **1 Claim**

1. A continuous process for preparing bisfluoroxydifluoromethane comprising the steps of:

(a) introducing a mixed gas stream containing carbon dioxide and fluorine into a continuous reactor at a temperature of from about 20° C. to about 30° C. and in a mole ratio of carbon dioxide to fluorine of about 0.40 to about 0.70, said reactor containing a catalytic amount of cesium fluoride,

(b) maintaining the temperature of the reactor in the range of from about 20° C. to about 30° C.,

(c) collecting the exit gases from the reactor, and

(d) recovering bisfluoroxydifluoromethane from the exit gases.

4,499,025

ELECTROCHEMICAL MAINTENANCE OF CATALYST ACTIVITY

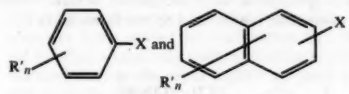
John B. Davison; Raymond J. Jasinski, both of Mission Viejo, and Pamela J. Peerce-Landers, Huntington Beach, all of Calif., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 23, 1982, Ser. No. 371,378

Int. Cl.[3] **C07C** *121/50*

U.S. Cl. 260—465 R **13 Claims**

1. In a process for the conversion of an aryl halide into an aryl cyanide which comprises reacting an aryl halide with a cyanide ion in the presence of a zero valent Group VIII metal catalyst, said aryl halide being selected from the group consisting of compounds having the general formula:



wherein X is a halogen radical selected from the group consisting of —Cl, —Br and —I; R′ is a radical selected from the group consisting of halogen radicals, hydrocarbyl radicals and hydrocarbyl radicals wherein one or more of the hydrogen radicals present therein may be substituted with halogen radicals; and n is an integer of from 0 to 1, and

wherein said zero valent Group VIII metal catalyst is susceptible to reaction with said cyanide ion to yield a catalytically-inactive Group VIII metal compound, said zero valent Group VIII metal catalyst being represented by compounds having the general formula:

MLm

wherein M is a Group VIII metal, L is a ligand capable of coordinating with M selected from the group consisting of CO; ligands represented by the general formula R_3Y wherein R is independently selected from the group consisting of hydrogen and hydrocarbyl radicals and Y is selected from the group consisting of N, P, As and Sb; hydrocarbon residues; ethers; and ketones, m being an integer of from about 2 to about 6,

the improvement comprising electrochemically converting said catalytically-inactive Group VIII metal compound into said zero valent Group VIII metal catalyst.

4,499,026

NUCLEOPHILIC SUBSTITUTION PROCESS

Barbara C. Stahly, and G. Patrick Stahly, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 411,554, Aug. 25, 1982, abandoned. This application Dec. 23, 1982, Ser. No. 452,618

Int. Cl.[3] **C07C** *121/50*

U.S. Cl. 260—465 R **19 Claims**

1. A process which comprises reacting a nitrobenzene which is devoid of halogen on the aromatic ring with an alpha-haloacetonitrile corresponding to the formula:

wherein L is halo and R is an alkyl group containing 1–10 carbons in an inert substantially anhydrous dipolar aprotic solvent and in the presence of a strong alkali metal compound

base so that the nitrile undergoes a nucleophilic substitution on an unsubstituted ring carbon of the nitrobenzene during which the alpha-halo substituent functions as a leaving group, thereby forming a 2-(nitrobenzene)acetonitrile.

4,499,027

PROCESS FOR PREPARING OPTICALLY ACTIVE [(3-AMINO-3-CARBOXY)PROPYL-1]PHOSPHINIC ACID DERIVATIVES

Nobuto Minowa, Yokohama; Shunzo Fukatsu; Kunitaka Tachibana, both of Tokyo; Taro Niida, Yokohama, and Sadaaki Mase, Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

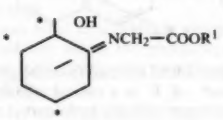
Filed May 18, 1984, Ser. No. 611,686

Claims priority, application Japan, May 27, 1983, 58-92448

Int. Cl.³ C07F *9/30*

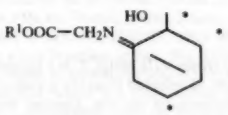
U.S. Cl. 260—502.5 G **16 Claims**

1. A process for preparing optically active [(3-amino-3-carboxy)propyl-1]phosphinic acid derivatives, which comprises reacting a compound represented by the formula (I)-1:



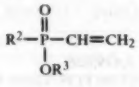
(I)-1

wherein R^1 represents a straight or branched chain alkyl group having 1 to 5 carbon atoms, an aryl group or an aralkyl group; and the absolute configurations of the three asymmetric carbon atoms indicated by * are each S-form or a compound represented by the formula (I)-2:



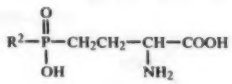
(I)-2

wherein R^1 have the same meaning as defined above; and the absolute configurations of the three asymmetric carbon atoms indicated by * are each R-form with a compound represented by the formula (II):



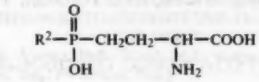
(II)

wherein R^2 and R^3 may be the same or different and each represent a straight or branched chain alkyl group having 1 to 5 carbon atoms, an aryl group or an aralkyl group, in the presence of a base, and subjecting the resulting compound to hydrolysis to form the optically active [L-(3-amino-3-carboxy)propyl-1]phosphinic acid derivatives represented by the formula (III)-1:



(III)-1

wherein R^2 have the same meaning as defined above; and the absolute configuration of the amino acid is L-form or [D-(3-amino-3-carboxy)propyl-1]phosphinic acid derivatives represented by the formula (III)-2:



(III)-2

wherein R^2 have the same meaning as defined above; and the absolute configuration of the amino acid is D-form.

4,499,028

PREPARATION OF ISETHIONIC ACID

Kermit D. Longley, Park Forest, Ill., assignor to Witco Chemical Corporation, New York, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,119

Int. Cl.³ C07C *143/02, 143/16*

U.S. Cl. 260—513 R **7 Claims**

1. A method for preparation of isethionic acid comprising; forming a reaction mixture consisting essentially of an alkali metal isethionate and a molar excess of hydrochloric acid, the hydrochloric acid being in the form of anhydrous gaseous hydrogen chloride or a concentrated aqueous solution, the alkali metal isethionate being in the form of a substantially saturated aqueous solution when the hydrochloric acid is anhydrous, and the alkali metal isethionate being in a substantially dry state when the hydrochloric acid is in the form of a concentrated aqueous solution, and reacting the alkali metal isethionate with the hydrochloric acid to form isethionic acid.

4,499,029

ISOBUTYRYL FLUORIDE MANUFACTURE

Carlo Scaccia, Worthington, and John R. Overley, Westerville, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 15, 1983, Ser. No. 504,702

Int. Cl.³ C07C *51/58*

U.S. Cl. 260—544 A **5 Claims**

1. The process for preparing isobutyryl fluoride consisting essentially of passing a substantially anhydrous reaction mixture of propylene, carbon monoxide and hydrogen fluoride through at least two continuous flow reaction zones and adding incremental amounts of substantially anhydrous propylene and carbon monoxide to the reaction mixture between reaction zones said process being carried out with a residence time in the reaction zones of from 15 seconds to 10 minutes, at a reaction pressure in the range of from atmospheric to 2200 p.s.i.a. at a reaction temperature in the range of from 0° C. to 100° C. with the molar ratio of propylene:carbon monoxide:hydrogen fluoride in the reaction mixture falling in the range of from 1:5:5 to 1:30:200.

4,499,030

REVERSIBLE HOUSING FOR EVAPORATIVE COOLER

Biven Stewart, 5402 E. Pinchot, Phoenix, Ariz. 85018

Filed Jan. 16, 1984, Ser. No. 571,074

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—3 **7 Claims**

1. An evaporative air temperature conditioner adapted for installation to draw and impel exterior air into a building comprising:

a housing having a generally horizontal positionable bottom pan-like member forming a sump, a similar generally horizontally positioned but inverted top pan-like member and upstanding side members,

the side, top and bottom members being connectable to form a space therewithin to enclose an air blower means,

at least one air admitting, air permeable, water impregnable pad mounted in one of said side members and closing an opening provided therefore,

another of said side members providing an opening for sealably receiving an air duct means which is connectable with the air blower means mountable in said housing,

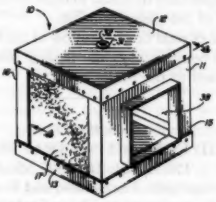
each bottom and top member being provided with an aperture extending therethrough in a common location,

a water overflow pipe,

means for connecting said pipe to extend through said aperture in said bottom member with one end thereof positioned a predetermined distance above an inside surface of said bottom member, and the other end of said pipe being connectable to a drain pipe,

a water delivery means,

means extending through said aperture in said top member for connecting said water delivery means to an inside surface of said top member,



said water delivery means having one end positioned over the top of said pad and its other end connectable to a pump mounted in the sump formed by said bottom member,

said top and bottom members being interchangeable with each other such that when said top member is inverted to form the bottom of the housing it forms a sump and said overflow pipe is connectable with said aperture formed therein, and

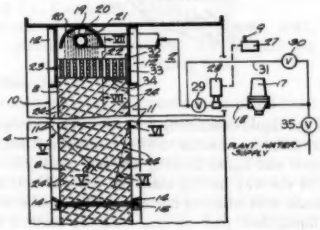
said bottom member when inverted forms the top of said housing with said water delivery means connectable through its aperture to complete a water delivery system to the top of said pad.

4,499,031

EVAPORATIVE GAS TREATING SYSTEM

Robert W. Sexton, and Richard L. Smith, both of Louisville, Ky., assignors to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Sep. 27, 1982, Ser. No. 423,536
Int. Cl.³ B01F 3/04
U.S. Cl. 261—66 **8 Claims**



1. An evaporative gas treating system for conditioning a gas stream, comprising:

a housing forming a duct having upstream and downstream ends adapted to conduct the gas stream through the housing;

a vertical panel of flow-through evaporative media secured across the upstream end of the duct;

a blower mounted within the duct downstream from the evaporative panel adapted to draw the gas stream through the duct;

liquid dispersal means adapted to conduct an evaporative liquid into the panel which evaporates into the gas stream as it flows through the panel;

a liquid distribution pad overlying the upper edge of said panel beneath the liquid dispersal means for dispersal of liquid across the upper edge of said panel;

said liquid dispersal means spanning the length of said liquid distribution pad and being off-set from the center of said pad toward the upstream edge of the pad;

a drain plate member of a generally L-shaped cross-sectional configuration spanning the length of said liquid distribution pad, said member including a vertically extending plate portion encasing the downstream edge of the pad and a generally horizontal plate portion extending a preselected distance between the pad and the top of the panel adapted to conduct liquid in the pad toward the upstream side of the panel;

said liquid dispersal means including an inverted U-shaped channel spanning the width of the panel aligned above its upper edge, and a pipe extending coextensively beneath said channel having a plurality of orifices distributed across the arcuate upper half of the pipe adapted to direct sprays of liquid against the total interior face of the channel to effect a relatively uniform distribution of the liquid widthwise across the upper edge of the panel as the liquid falls from the channel;

liquid supply means connected with said liquid dispersal means adapted to conduct a metered flow of liquid to said dispersal means; and

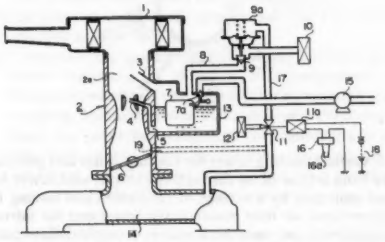
sensor means mounted within the duct downstream from the blower for measuring a preselected condition in the gas stream proximate said sensor means, said sensor means being operatively connected with said liquid supply means to selectively increase and decrease the flow of liquid into the panel through the dispersal means to maintain said condition in the gas stream at a predetermined magnitude downstream from the panel.

4,499,032

SYSTEM FOR PREVENTING THE PERCOLATION OF FUEL IN A CARBURETOR

Kenji Shibano, Musashimurayama, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 485,846
Claims priority, application Japan, Apr. 20, 1982, 57-65998
Int. Cl.³ F02M 5/08
U.S. Cl. 261—72 R **5 Claims**



1. A system preventing the percolation of fuel in a carburetor for an engine having a float chamber, comprising:

a first passage communicating a space of said float chamber with the atmosphere;

means comprising a diaphragm valve with a vacuum chamber for closing said passage;

an inner vent pipe for communicating the space of the float chamber with an intake passage of said carburetor; and

means for sensing a high temperature which would cause the percolation of the fuel and for opening said diaphragm valve.

4,499,033

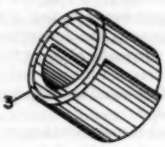
CLOSELY COILED PACKING ELEMENT, METHOD OF MANUFACTURE, AND PROCESS FOR PURIFYING GASES

Lowell E. Huffman, 10 Albe Dr., Newark, Del. 19702

Continuation-in-part of Ser. No. 309,602, Oct. 8, 1981, abandoned. This application Apr. 7, 1983, Ser. No. 482,838

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—94 7 Claims



1. A closely coiled multilayer element for purifying compressed gasses of entrained solids and liquids, comprising a coiled cylinder around a central axis where each coiled multilayer element has more than one complete coil, each successive coil being sufficiently close to the previous coil to entrap solids and liquids between successive layers thereby preventing their re-entrainment into the compressed gasses wherein the closely coiled multilayer element retains its integrity when wet and when uncoiled has a solid surface with the following dimensions: Length from about 0.2 to about 1.0 inches, Width from about 0.02 to about 0.25 inches and Depth, about 0.001 to about 0.02 inches.

4,499,034

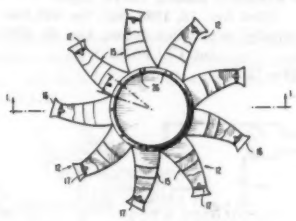
VORTEX-AUGMENTED COOLING TOWER-WINDMILL COMBINATION

John E. McAllister, Jr., Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 2, 1982, Ser. No. 414,193

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—109 11 Claims



1. A vertical cooling tower for cooling water and generating power from a flow of air through the tower, said tower being defined generally by a surface of revolution and having fixed omnidirectional air inlet means at the lower end for introducing atmospheric air into the tower in a vortical flow pattern regardless of wind direction, the upper end of the tower being open to discharge said introduced air upwardly in a vortex draft pattern, means to introduce water to be cooled in the interior of the tower and wind turbine means disposed in said air inlet means for generating power;

said fixed omnidirectional air inlet means comprising a plurality of passages, each passage having a first portion located adjacent to the wind turbine means and a second portion located adjacent to the outlet end;

each of said plurality of passages including additional air inlet means downstream of said wind turbine means to reduce boundary layer effects;

the cross-sectional area of each of said plurality of passages increasing progressively from said first portion of the passage adjacent to the wind turbine means to said second portion adjacent to the outlet end;

the configuration of each said passage adjacent the wind turbine means being circular for closely encircling a rotating element of the wind turbine means, said cross-sectional configuration progressively merging into a rectangular outline terminating at the intersection with a lower end of the surface of revolution defining said tower;

said additional air inlet means comprising an elongated horizontal opening defined on one side by a terminal downstream margin of a horizontal wall of each of said plurality of passages, the opposite side of the opening being defined by the upstream terminal margin of a succeeding horizontal wall of the passage means;

the cross-sectional configuration of each of said plurality of passages being rectangular from at least said additional air inlet means to the outlet end.

4,499,035

GAS-LIQUID CONTACTING TRAY WITH IMPROVED INLET BUBBLING MEANS

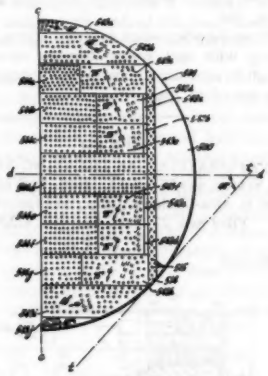
Robert D. Kirkpatrick, Tonawanda, and David W. Weiler, Burt, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 778,797, Mar. 17, 1977, Pat. No. 4,275,021. This application Oct. 29, 1980, Ser. No. 201,770

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—114 JP 11 Claims



1. In a gas-liquid contacting tray of the slotted sieve-type for use in a distillation column to effect intimate contact between rising vapor and liquid flowing across a gas-liquid contacting member of the tray having main flat top and bottom surfaces from a liquid inlet adjacent one edge of the contacting member along a liquid flow path on said main top surface including a diverging flow section adjacent said inlet to a liquid discharge adjacent an opposite edge of said contacting member, with a plurality of fixed sized openings distributed across the contacting member and extending therethrough with walls normal to said main flat top and bottom surfaces for gas flow, and a plurality of elevated portions formed from said member across said surfaces each with an upper surface raised from said main flat top surface having a front leading edge separated from said main flat top surface to form an elongated slot opening therewith of greater width than height, the raised upper surface being inclined to said main top surface and having a back edge integral with such surface and each elevated portion being spaced from adjacent elevated portions by said main flat top

surface entirely surrounding such elevated portion, the improvement comprising:

(a) a first imperforate wall member contiguously associated and coextensive with an edge of said inlet surface transverse to the liquid flow path and extending substantially vertically upwardly from such edge to a substantially uniform height;

(b) an intermediate wall member with main flat top and bottom surface contigously associated and coextensive with the upper edge of said first wall member extending horizontally therefrom in the direction of said liquid discharge to a substantially uniform extent, with a plurality of fixed size openings uniformly distributed across said intermediate wall member and extending therethrough with walls normal to said main flat top and bottom surfaces for gas flow, to initiate bubbling in liquid flowing across said intermediate wall member from said inlet surface over said first imperforate wall member;

(c) a second imperforate wall member contiguously associated and coextensive at its upper edge with the downstream edge of said intermediate wall member and extending substantially vertically downwardly therefrom and contiguously associated and coextensive at its lower edge with said one edge of said contacting member, whereby liquid which has been flowed across said intermediate wall member and in which bubbling has been initiated is introduced to said gas-liquid contacting member for flow thereacross to said discharge, and

(d) a band portion of said contacting member adjacent to said liquid inlet and extending therefrom downstream for distance of from 20% to 50% of the length of the tray diametral streamline from said liquid inlet surface to the tray transverse center line and extending transversely outwardly from the tray diametral streamline for distance at least 25% of the transverse length of said liquid inlet surface, with angular orientation of slot openings in said contacting member first band portion with respect to and away from the tray diametral streamline such that the slot angle of individual slots is greater than the angle formed by the diametral streamline and a tangent line at the contacting member outer edge at the point of intersection with said liquid inlet surface.

4,499,036

MICROWAVE CURING OF LATEX-BASED COMPOSITIONS

J. Barry Hawkes, Jr., Watertown, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Continuation of Ser. No. 419,376, Sep. 20, 1982,. This application Jul. 20, 1984, Ser. No. 632,682

Int. Cl.³ B29H *5/26*

U.S. Cl. 264—26 **27 Claims**

1. A process of forming a cured latex-based foam composition comprising the steps of heating a fluid rubber latex containing a gelling agent, a curing agent and a blowing agent to effect gelling and foaming thereof and removal of a major proportion of the water initially contained therein and subjecting the resultant gelled and foamed composition to microwave radiation to effect curing thereof, said microwave radiation being modulated to provide substantially uniform and complete curing of said gelled and foamed composition.

4,499,037

METHOD FOR THE RECOVERY OF THERMOPLASTIC FROM PIPING FOR REPROCESSING

Ray A. Parker, Jr., Brownwood, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 281,755, Jul. 9, 1981, Pat. No. 4,408,976. This application Jun. 15, 1983, Ser. No. 504,542

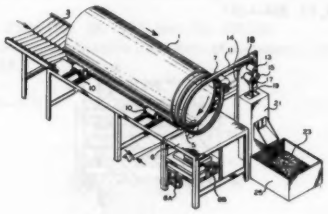
Int. Cl.³ B29C *29/00*

U.S. Cl. 264—37 **3 Claims**

1. A process for recovery of thermoplastic from thermoplastic piping having walls sufficiently thick to be self-supporting, comprising the steps of:

(a) cutting said piping into a continuous spiral ribbon,

(b) straightening said continuous spiral ribbon into a continuous ribbon of thermoplastic without substantial curvature, at least temporarily relieving the plastic memory of said thermoplastic ribbon, and



(c) cutting said straightening ribbon into pieces while said plastic ribbon is relieved of its plastic memory.

4,499,038

PROCESS FOR THE PRODUCTION OF MICROCELLULAR MOLDINGS FROM DIISOCYANATE AND COMPOUNDS CONTAINING GROUPS OBTAINED BY REACTING AMINO GROUPS WITH CARBON DIOXIDE

Walter Schäfer, Cologne; Hans-Joachim Meiners, Leverkusen; Klaus Seel, Cologne; Wolfgang Reichmann, Hilden; Kuno Wagner, Leverkusen, and Kurt Findeisen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,040

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3242925

Int. Cl.³ C08G *18/14*

U.S. Cl. 264—51 **9 Claims**

1. A process for the production of polyurea-based microcellular moldings comprising reacting

(a) at least one diisocyantate or polyisocyanate containing only aromatically bound isocyanate groups,

(b) at least one compound containing at least two isocyanate reactive groups, and

(c) optionally the auxiliaries and additives known in polyurethane chemistry, in closed molds, components (a)–(c) being processed as a one-shot system by reaction injection molding, characterized in that component (b) comprises at least one polyether compound (b1) optionally in admixture with other isocyanate-reactive coupounds and containing at least 3 aliphatically bonded ether groups and n aliphatically bonded isocyanate-reactive groups, n standing for a number of from 2–4

(i) at least (100:n) % of the isocyanate-reactive groups present in component (b1) being aliphatically bonded primary and/or secondary amino groups,

(ii) at least 10 equivalent % of said amino groups being present in the form of ammonium carbamate groups having a functionality of two in the isocyanate addition reaction, obtained by reacting aliphatically bonded, primary or secondary amino groups with carbon dioxide,

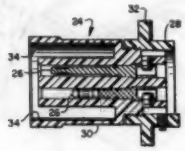
(iii) the unmodified compounds containing at least 3 ether groups having a molecular weight of from 200 to 10,000 and (iv) at least 0.2 equivalent % of all isocyanate-reactive groups of the total component (b) being ammonium carbamate groups.

4,499,039

METHOD FOR MAKING PLASTIC ARTICLE WITH FIBROUS REINFORCEMENT

Arthur H. Berg, Chase Rd., Fabius, N.Y. 13063

Filed Dec. 29, 1981, Ser. No. 335,543
Int. Cl.³ B29G *5/00*
U.S. Cl. 264—137 **15 Claims**



1. In a method of manufacturing a molded plastic electrical connector component having an open mesh glass cloth reinforcement, comprising the steps of:

first providing an open, woven mesh glass cloth having a glass fiber content of from about 15% to about 50% by volume, and treating said cloth with an uncured thermosetting resin coating in an amount which ranges between about 20 and about 50% of the weight of the coated cloth;

then shaping the thermosetting resin-coated open mesh glass cloth by wrapping one or more layers of the cloth about a mandrel;

then over-wrapping the cloth under tension with a release film;

then curing the thermosetting resin coating to the insoluble and infusible state to form the reinforcement;

then placing the cured resin-coated open mesh glass reinforcement on or over a suitable cored section in a mold used to produce the connector component, said mold being suited to injection molding of a plastics material therein;

then injection molding an initially solid plastics material under conditions of elevated pressure and elevated temperature sufficient to render said plastics material molten and permitting the molten plastics material injected into the mold cavity to flow on, through and about the shaped open mesh glass cloth reinforcement substantially without deformation thereof to form the molded connector component having the reinforcement substantially imbedded therein, whereby the connector component is reinforced substantially uniformly over the area in which the reinforcement is imbedded; and

hardening the molded plastics material and removing the connector component from the mold.

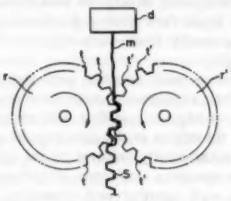
4,499,040

PRODUCTION OF STAMPED PLASTIC SHEET

Kenichi Maemoto, Osaka, and Katsushi Jinno, Ehime, both of Japan, assignors to Nissen Chemical Industries Co., Ltd., Ehime, Japan

Filed Apr. 19, 1982, Ser. No. 369,771
Claims priority, application Japan, Apr. 20, 1981, 56-60345; Oct. 30, 1981, 56-214867; Jan. 25, 1982, 57-10449
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—167 **4 Claims**

1. A method of preparing a stamped sheet by means of a pair of stamping rolls having intermeshing projections disposed in a liquid refrigerant comprising immersing a film-like sheet of molten plastic material having a uniform thickness in said liquid refrigerant to form a skin on the surface of the molten material, immediately passing the molten plastic material having a skin thereon between said stamping rolls, stamping the material to tension the material by engagement of the material with the crests only of the projections while maintaining the uniform thickness of said sheet and removing said sheet from



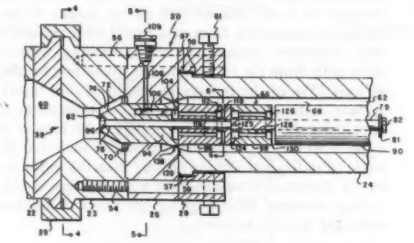
the refrigerant after the interior of the material has been solidified.

4,499,041

COEXTRUSION PROCESS FOR PRODUCING MULTIPLE LAYERED THERMOPLASTIC PIPE

Granville J. Hahn; Raleigh N. Rutledge, and Jackie D. Murley, all of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed May 23, 1983, Ser. No. 497,312
Int. Cl.³ B29F *3/04*
U.S. Cl. 264—173 **5 Claims**



1. A process for making multiple layered thermoplastic pipe, comprising:

(a) transporting a first portion of an annular stream of a first thermoplastic material through an annular main extrusion passageway having an annular restriction therein, the annular restriction reuniting the thermoplastic material after flow disruption thereof;

(b) transporting a second portion of the first thermoplastic material through a coextrusion passageway axially disposed within the annulus formed by the main extrusion passageway;

(c) balancing any difference in flow rates between the thermoplastic material in the main extrusion passageway and the thermoplastic material in the coextrusion passageway by restricting the flow of thermoplastic through the coextrusion passageway;

(d) applying an annular stream of a second thermoplastic material to the inner surface of the annular stream of the first portion of the first thermoplastic material flowing thereover, the stream of the second thermoplastic material applied downstream of the main extrusion passageway annular restriction; and

(e) applying the annular stream of the second portion of the first thermoplastic material to the inside surface of the annular stream of the second thermoplastic material flowing thereover, the annular stream of the second portion of the first thermoplastic material applied downstream of the application of the second thermoplastic material.

4,499,042

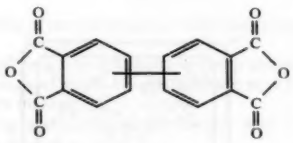
PRODUCTION OF HEAT-SHRINKABLE POLYIMIDE FILMS

Takashi Ishizuka; Yasuhiro Moriyama, and Masao Nakamura, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 238,279, Feb. 25, 1981, abandoned. This application Apr. 4, 1983, Ser. No. 481,960
Claims priority, application Japan, Feb. 25, 1980, 55/23020
Int. Cl.³ B29D 7/02
U.S. Cl. 264—205 6 Claims

1. A process for producing a heat-shrinkable polyimide film which comprises forming a film by

flow molding a solution of organic solvent-soluble polyamide acid having an inherent viscosity of about 0.5 or more obtained by reacting a biphenyltetracarboxylic acid dianhydride represented by the general formula



with an aromatic diamine other than aromatic azo diamines in an organic polar solvent, drying said film until the volatile material content becomes about 10% by weight or less to produce a polyimide film wherein at least about 50% by weight of polyamide acid is converted into polyimide, and stretching thereafter said polyimide film in at least one direction to a stretching ratio of about 1.05 to about 5 to provide heat-shrinkability.

4,499,043

PROCESS FOR PRODUCING A CELLULOSE ESTER SUPPORT

Masao Yabe; Kyoichi Naruo, both of Shizuoka, and Kazuhiro Ono, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 6, 1982, Ser. No. 375,631
Claims priority, application Japan, May 6, 1981, 56-67831
Int. Cl.³ B29D 7/02
U.S. Cl. 264—207 5 Claims

1. A process for producing a cellulose ester support comprising the steps of:

providing a cellulose ester;

removing alkaline earth metal from the cellulose ester to the extent that the cellulose ester contains 30 ppm or less alkaline earth metal;

adding a solvent for the cellulose ester;

adding a plasticizer;

mixing the cellulose ester, solvent and plasticizer to form a mixture;

extruding the mixture to form the solution film;

allowing the solvent to evaporate;

delaminating the thus formed film; and

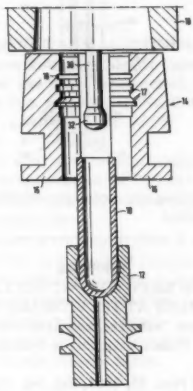
drying the delaminated film.

4,499,044

METHOD FOR MAKING A PARISON FOR BLOWMOLDING OF A HOLLOW ARTICLE

Norbert Höne; Claus Horwege, and Otto Rosenkranz, all of Hamburg, Fed. Rep. of Germany, assignors to Krupp Corpoplast Maschinenplast GmbH, Hamburg, Fed. Rep. of Germany

Filed Dec. 30, 1981, Ser. No. 335,884
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1981, 3101284
Int. Cl.³ B29C 17/07
U.S. Cl. 264—521 3 Claims



1. In a method of making a parison for blow molding a hollow body of thermoplastic material, in particular a bottle, wherein the parison includes an upper finish portion, a neck portion adjacent the finish portion and a closed bottom portion opposite the finish portion, said method comprising the steps of: heating the finish portion and the neck portion of the parison to welding and forming temperature, enclosing the heated portion of the parison in a finish mold, inserting a forming mandrel into the parison to urge plastic heated material from the finish portion into a part of the finish mold and secure the finish portion to said mold, further axially stretching the parison portion enclosed in said mold by a stretching pin to substantially reduce the wall thickness in the remaining finish portion and neck portion and shaping the final profile of the finish portion by applying a pressure medium.

4,499,045

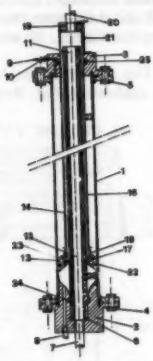
PROCESS FOR THE PRODUCTION OF TUBES OF A MOLECULARLY ORIENTED PLASTIC

Marc Obsomer, Brussels, Belgium, assignor to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Filed Aug. 5, 1982, Ser. No. 405,708
Claims priority, application France, Aug. 6, 1981, 81 15427
Int. Cl.³ B29C 17/07
U.S. Cl. 264—532 4 Claims

1. A process for the production of a tube of a molecularly oriented plastic, wherein a section of a tube, heated to the temperature at which stretching induces a molecular orientation of the plastic, is placed in a mold and a portion of the section of the tube is clamped in a sleeve and the sleeve is caused to undergo a relative movement along the section of the tube while a fluid under pressure is introduced into the tube so as to cause radial expansion to an internal wall of the mold of portions of the tube at the outlet of the sleeve progressively along the section and the resulting oriented tube is finally cooled and removed from the mold, characterized in that the portions of the tube undergoing radial expansion slide over an annular surface which is located at the outlet of the sleeve and

extends up to the internal wall of the mold, said annular surface providing a counter-balancing support to the fluid under pressure, thereby enabling the molecular orientation of the plastic tube to be controlled.

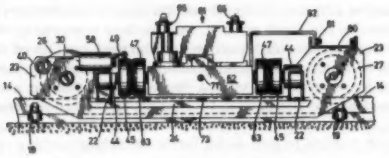


4,499,046

MACHINE FOR MONITORING NUCLEAR REACTOR EQUIPMENT AT ITS STORAGE STATION

Yves-Marie Castrec, Nanterre, and Jean-Pierre Launay, Marly Le Roi, both of France, assignors to Framatome & Cie., Courbevoie, France

Filed Nov. 16, 1981, Ser. No. 321,513
Claims priority, application France, Dec. 5, 1980, 80 25865
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—245 **2 Claims**



1. Machine for monitoring internal equipment of a nuclear reactor, when stored in the swimming pool of said reactor, by using monitoring apparatuses to be presented at predetermined stations in accordance with a regular lattice under a lower plate of said equipment, comprising

(a) a first longitudinal carriage (**16**), movable on rails (**14**) resting at the bottom of said swimming pool and disposed under a support (**6, 7**) for storing said equipment, with means (**26,32,33**) for displacement in predetermined steps and immobilization on said rails;

(b) a transverse beam (**46**) borne by said first carriage (**16**) and movable thereon in a direction perpendicular to that of the displacement direction of said first carriage (**16**);

(c) a second transverse carriage (**61**) equipped with monitoring apparatuses (**65**) borne by said beam (**46**) and movable thereon in the same direction as that of the displacement of said beam (**46**) on said first carriage (**16**);

(d) means (**51, 57, 58**) for displacement by fixed steps of said beam (**46**) on said first carriage (**16**); and

(e) means (**71, 72, 73**) for causing movement of said second carriage (**61**) on said beam (**46**) from the movement of said beam (**46**) on said first carriage (**16**), said means comprising a chain (**71**) forming a loop by each of its ends being fixed on each end of said second carriage (**61**), after reversal on two wheels (**72**) solid with the ends (**48**) of said beam, the portion of said loop opposite said second carriage (**61**) being made solid with a fixed point (**73**) connected to the chassis of said first carriage (**16**);

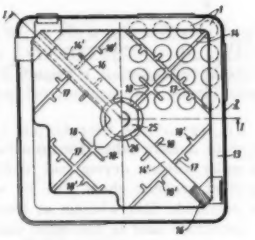
(f) the displacements of said first carriage (**16**) on said rails (**14**), said transverse beam (**46**) on said first carriage (**16**) and said second carriage (**61**) on said beam (**46**) all being carried out in substantially the same horizontal plane.

4,499,047

FUEL ASSEMBLY WITH A TOP PLATE ARRANGED ABOVE THE UPPER END SURFACES OF THE FUEL RODS

Bo Borrman, and Bengt Ode, both of Västerås, Sweden, assignors to AB Asea-Atom, Västerås, Sweden

Filed Oct. 30, 1981, Ser. No. 315,605
Claims priority, application Sweden, Dec. 19, 1980, 80089873
Int. Cl.³ G21C *9/00*
U.S. Cl. 376—434 **6 Claims**



1. A fuel assembly for a boiling water reactor comprising:

a plurality of fuel rods having vertical center lines;

at least one bottom plate supporting said fuel rods;

a vertical fuel channel of rectangular cross-section;

partition means dividing said fuel channel into four sub-channels, each sub-channel enclosing a bundle of said fuel rods positioned by means of a plurality of spacer devices to constitute a sub-assembly of fuel rods, said spacer devices having a limited freedom of movement in an axially upward direction in relation to said fuel channel; and,

means for limited movement of said fuel rods in an axially upward direction, said movement limited means including a top plate positioned a vertical distance above said fuel rods at room temperature, said top plate comprising:

a central member arranged in detachable mechanical connection with said partition means,

a frame disposed with four sides adjacent to corresponding sides of said fuel channel,

four substantially horizontally directed diagonal bars rigidly connected to corresponding corner portions of said frame at one end and to said central member at the other end, and,

four substantially horizontally directed cross bars arranged to cross said diagonal bars, said diagonal bars having a mid-portion rigidly connected to a mid-portion of a corresponding cross bar and each of said cross bars having a plurality of horizontally directed first elongated projections each projecting laterally from said cross bar in a direction towards the vertical center line of a corresponding fuel rod,

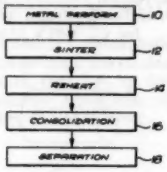
said frame having a corner portion positioned vertically above a first group of fuel rods belonging to a said sub-assembly, a second group of fuel rods belonging to the same said sub-assembly being positioned vertically below free end portions of said first elongated projections, and said corner portion and each of said first elongated projections being contactable by corresponding fuel rods upon a sufficiently large vertically upwardly-directed movement of said corresponding fuel rods.

4,499,048

METHOD OF CONSOLIDATING A METALLIC BODY

Francis G. Hanejko, Irvine, Calif., assignor to Metal Alloys, Inc., Signal Hill, Calif.

Filed Feb. 23, 1983, Ser. No. 469,100
Int. Cl.[3] B22F 3/00
U.S. Cl. 419—49 10 Claims



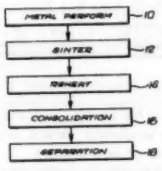
1. A method of consolidating a metallic body comprising the steps of:
(a) forming an article of manufacture from powdered metal;
(b) sintering said article of manufacture so as to increase the strength thereof;
(c) coating said article of manufacture with a sacrificial cermic coating;
(d) providing a bed of heated, generally spheroidal ceramic particles;
(e) compacting said coated article of manufacture in said heated bed of generally spheroidal ceramic particles under high pressure to thereby consolidate said coated article of manufacture into a dense, desired shape; and
(f) removing said sacrificial ceramic coating such that the surface of said article of manufacture remains substantially free of process-related inperfections.

4,499,049

METHOD OF CONSOLIDATING A METALLIC OR CERAMIC BODY

Francis G. Hanejko, Irvine, Calif., assignor to Metal Alloys, Inc., Signal Hill, Calif.

Filed Feb. 23, 1983, Ser. No. 469,101
Int. Cl.[3] B22F 3/00
U.S. Cl. 419—49 10 Claims



1. A method of consolidating a metallic or ceramic body comprising the steps of:
(a) forming an article of manufacture from powdered metal or ceramic materials;
(b) sintering said article of manufacture so as to increase the strength thereof;
(c) providing a bed of heated, generally spheroidal ceramic particles which have been coated with a thermally stable, generally non-reactive lubricant; and
(d) compacting said article of manufacture in said heated bed of generally spheroidal coated ceramic particles under high pressure to thereby consolidate said article of manufacture into a dense, desired shape.

4,499,050

ALUMINUM-MANGANESE-TIN ALLOYS WITH IMPROVED PITTING CORROSION RESISTANCE

Hua S. Tong, Morris Township, Morris County, N.J., assignor to Revere Copper and Brass Incorporated, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,265
Int. Cl.[3] C22C 21/00
U.S. Cl. 420—528 12 Claims

1. An aluminum alloy composition consisting essentially of 0.2 to 2 weight percent manganese and 0.2 to 1.5 weight percent tin, with the balance being essentially aluminum.

4,499,051

PITTING RESISTANT ALUMINUM ALLOYS

Hua S. Tong, Morris Township, Morris County, N.J., assignor to Revere Copper and Brass Incorporated, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,266
Int. Cl.[3] C22C 21/00
U.S. Cl. 420—540 12 Claims

1. An aluminum alloy composition consisting essentially of 0.2 to 2 weight percent manganese, 0.02 to 0.4 weight percent lead, and 0.02 to 0.2 weight percent bismuth, with the balance being essentially aluminum.

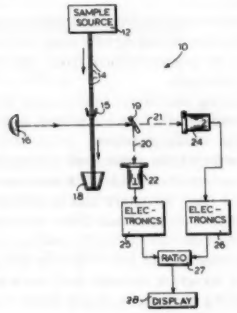
3. The composition according to claim 1 wherein said composition contains 0.03 to 0.5 weight percent zinc, and at least one of the elements selected from the group consisting of
(a) 0.05 to 0.5 weight percent titanium,
(b) 0.03 to 0.2 weight percent cobalt,
(c) 0.03 to 0.5 weight percent zirconium, and
(d) 0.03 to 0.1 weight percent boron.

4,499,052

APPARATUS FOR DISTINGUISHING MULTIPLE SUBPOPULATIONS OF CELLS

Mack J. Fulwyler, Sunnyvale, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Aug. 30, 1982, Ser. No. 412,648
Int. Cl.[3] G01N 21/64, 33/50
U.S. Cl. 422—52 10 Claims

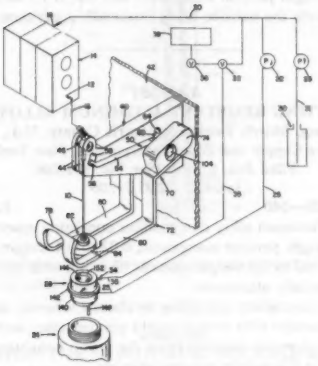


1. An apparatus for distinguishing multiple subpopulations of particles, each of which have been labeled with different fluorochromes in pre-determined ratios comprising: means for exciting the fluorochromes on each particle as it flows in a liquid path; means for detecting the quantity of fluorescence emitted by the different fluorochromes associated with each particle and determining the ratio of fluorescence quantities of any two fluorochromes associated with each particle; and means for classifying said particles into a plurality of subpopulations categories by associating said determined ratios with pre-determined ratios.

4,499,053
FLUID SAMPLING

Ronald L. Jones, Harvard, Mass., assignor to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Jun. 10, 1982, Ser. No. 386,892
Int. Cl.[3] G01N 1/14
U.S. Cl. 422—68 18 Claims



1. Liquid sample analyzer apparatus having an analysis chamber adapted to receive sample material to be analyzed, sensor means coupled to said analysis chamber for providing an output signal related to a constituent of the sample material,

sampling apparatus comprising a hollow sample intake tube having an inlet port adapted to receive sample material to be analyzed and an outlet port coupled to said analysis chamber,

slider structure that receives said intake tube,

support structure including tube support structure and track structure in predetermined fixed relation to said tube support structure,

means mounting said intake tube on said tube support structure for movement between a reset position and at least two sample intake positions,

manually manipulable drive link structure having a first portion mounted on said track structure for movement along said track structure and a second portion spaced from said first portion, said slider structure being pivotably mounted on and carried by said second portion,

said first portion of said link structure being movable along said track structure to cause said second portion to produce guiding movement of said slider structure to move said intake tube between said reset position in which said inlet port is aligned with a waste receptacle, a first sample position in which said inlet port extends forward of said slider structure and is presented to an operator for insertion into a sample container, and a second sample position in which said inlet port is housed in said slider structure and presented to an operator for connection of a transfer device such as a capillary tube,

and a sampling apparatus control arrangement including

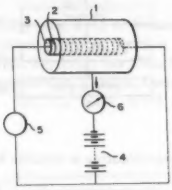
means for flowing sample material through said sample inlet port into said analysis chamber, and

means for flowing cleaning fluid through said analysis chamber and said sampling apparatus in a flushing action.

4,499,054
CATION EMISSION TYPE HALOGENATED HYDROCARBON GAS DETECTING ELEMENT

Masaki Katsura, Yokosuka; Mituo Harata, Kawasaki; Osamu Takikawa, Kamakura, and Masayuki Shiratori, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 24, 1982, Ser. No. 411,019
Claims priority, application Japan, Aug. 31, 1981, 56-135414
Int. Cl.[3] G01N 27/62
U.S. Cl. 422—98 2 Claims

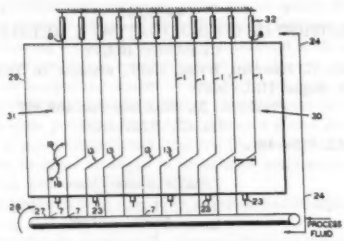


1. In a cation emission type halogenated hydrocarbon gas detecting element comprising a cation source, a heating means and an ion collector electrode, the improvement wherein said cation source consists essentially of Beta-Al_2O_3, wherein substantially all cation species present in said cation source occupy positions in the crystal lattice structure of said Beta-Al_2O_3.

4,499,055
FURNACE HAVING BENT/SINGLE-PASS TUBES

Arthur R. DiNicolantonio, Whippany, and Victor K. Wei, Florham Park, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 14, 1981, Ser. No. 301,763
Int. Cl.[3] C01D 1/32
U.S. Cl. 422—197 41 Claims



1. A fired heater for heating process fluid comprising:

radiant section enclosure means for defining at least one radiant section of said heater,

at least one row of plural, single-pass radiant conduit means extending longitudinally within each of said radiant sections, each of said radiant conduit means having a rigid inlet connection to a common inlet manifold and a rigid outlet connection to receiving means to which process fluid is fed in use such that differential thermal growth of said conduit means is constrained during use of said heater, and

at least one row of burners arranged adjacent to said row of radiant conduit means to heat said radiant conduit means in use,

wherein at least one of said inlet and outlet connections in said row all lie along a common, vertical coil plane, and

wherein said radiant conduit means in said row are at least partially skewed in substantially parallel planes out of said vertical coil plane such that during operation of said fired

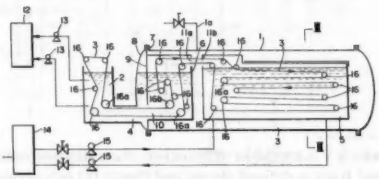
heater said skewed conduit means each absorb differential thermal expansions and contractions between adjacent conduit means by changing longitudinal configuration in substantially the same direction with respect to said row of burners.

4,499,056

CONTINUOUS STERILIZING APPARATUS USING HOT WATER

Motoharu Tokano, and Keiichi Kushima, both of Tokyo, Japan, assignors to Q. P. Corporation, Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,942
Claims priority, application Japan, Mar. 18, 1983, 58-44424
Int. Cl.³ A61L *1/00*
U.S. Cl. 422—299 **6 Claims**



1. A continuous sterilizing apparatus comprising:
a pressure tank;
a hot water storage vessel for holding therein hot water at a temperature capable of sterilizing an article to be sterilized, said hot water storage vessel being mounted within said pressure tank;
a heat insulating material provided on the outer periphery of said hot water storage vessel;
an outer frame assembly mounted independently of and along side walls of said hot water storage vessel in spaced relation from the latter so that said heat insulating material is accommodated within the spacing;
a cooling water storage vessel mounted within said pressure tank separately from said hot water storage tank;
a conveyor means for holding and conveying the article to be sterilized through the cooling water in said cooling water storage vessel and also through the hot water in said hot water storage tank;
a group of many sprockets serving as a guide for movement of said conveyor means, said group of many sprockets being disposed at appropriate intervals at least within said hot water storage vessel and said cooling water storage vessel;
rotating shafts serving as rotating centers of the sprockets of said sprocket group; and
bearings for rotatably supporting said rotating shafts, said bearings being attached to said outer frame assembly.

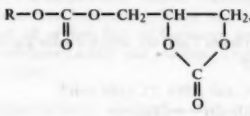
4,499,057

EXTRACTION OF METALS FROM AQUEOUS SOLUTIONS WITH CYCLIC ORGANIC CARBONATES

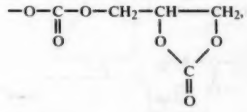
Michel Burgard, Strasbourg; Marc D. Piteau, Itteville; Alain J. Rollat, Strasbourg Neudorf, and Jean-Pierre G. Senet, La Chapelle La Reine, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Division of Ser. No. 139,155, Apr. 14, 1980, Pat. No. 4,423,235. This application Sep. 22, 1982, Ser. No. 421,723
Claims priority, application France, Apr. 13, 1979, 79 09402
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—8 **9 Claims**

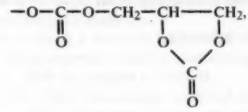
1. Process for the separation, by liquid-liquid extraction, of valuable metal species from an aqueous solution in which they are present, comprising:
(1) bringing the said aqueous solution into contact with an organic phase comprising a compound which is a carbonate having cyclic carbonate groups, of the general formula:



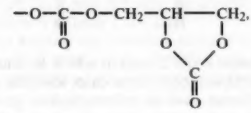
in which R is
(a) a linear or branched alkyl group which contains from 1 to 20 carbon atoms and is substituted by one to three groups



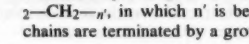
(b) an alicyclic group which contains 4 to 20 carbon atoms and is optionally substituted by one to three groups



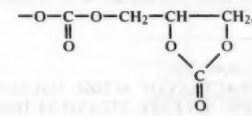
(c) a carboxylate group which contains from 2 to 20 carbon atoms and is optionally substituted by a group



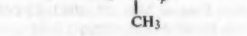
(d) a polyoxyethylene of the formula



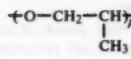
in which n is between 1 and 40 and in which R′ is a hydrocarbon group containing from 1 to 10 carbon atoms and optionally has one or two chains —O—CH₂—CH₂—$_{n'}$, in which n′ is between 1 and 40, which chains are terminated by a group



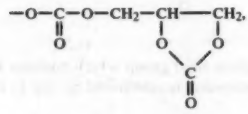
(e) a polyoxypropylene of the formula



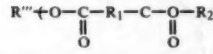
in which p is between 1 and 40 and in which R′ is a hydrocarbon group containing from 1 to 10 carbon atoms and optionally carries one or two chains



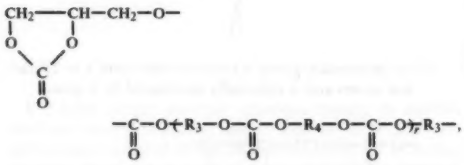
in which p' is between 1 and 40, which chains are terminated by a group



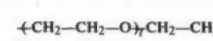
(f) an aryl group containing from 6 to 20 carbon atoms,
(g) a polyester of the formula



in which Q is between 1 and 20, in which R_1 and R_2 are identical or different and are a polymethylene chain having from 1 to 8 carbon atoms or a polyether chain having from 1 to 8 carbon atoms, and in which R' is a hydrocarbon group containing from 1 to 10 carbon atoms, or
(h) an aliphatic polycarbonate



in which r is between 1 and 20 and in which R_3 and R_4 are identical or different, or in some cases identical and in other cases different, and are polymethylene groups containing from 2 to 8 carbon atoms or polyoxyethylene groups



optionally in solution in an essentially water-immiscible organic solvent, so that the said valuable metal species are at least partially extracted into the organic phase;
(2) separating the charged organic phase containing the valuable metal species extracted from the aqueous solution in the form of a complex with said compound; and
(3) recovering the valuable metal species from the organic phase by bringing the latter into contact with an aqueous stripping medium.

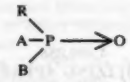
4,499,058

LIQUID/LIQUID EXTRACTION OF ACIDIC AQUEOUS STREAMS COMPRISING SULFATE/TITANIUM/IRON VALUES

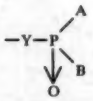
Richard Fitoussi; Alain Leveque, both of Paris, and Jean-Louis Sabot, Maisons-Laffitte, all of France, assignors to Rhone-Poulenc S.A., Courbevoie, France

Filed Mar. 16, 1983, Ser. No. 475,739
Claims priority, application France, Mar. 19, 1982, 82 04684
Int. Cl.[3] **C01G** *23/00;* **B01D** *11/04;* **C01B** *17/90*
U.S. Cl. 423—70 **20 Claims**

1. A process for the treatment of an acidic aqueous phase containing sulfate ion and particularly sulfuric acid values, titanium ion and particularly titanium (IV) values, and iron ion, particularly iron (II) values, comprising (i) extracting said aqueous phase with an initial organic phase which comprises at least one organic extractant having the general formula:



in which A and B, which may be the same or different, are the groups R_1 or OR_2, wherein R_1 and R_2 are straight or branched chain alkyl, alkenyl, alkynyl, alkoxyalkyl, aryl or alkylaryl radicals, or halogen substituted such radicals; and R is either R_1 or R_2 as above-defined, with R, R_1 and R_2 either being the same or different, or R is a group having the general formula:



in which Y is a straight or branched chain alkylene radical, and A and B are as defined above; and thence (ii) recovering a final aqueous phase comprising substantially all of said iron (II) values present in said initial aqueous phase and a final organic phase comprising substantially all of said sulfuric acid values and substantially all of said titanium values present in said initial aqueous phase.

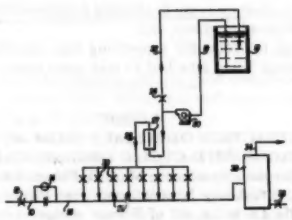
14. The process as defined by claim **1**, wherein said initial aqueous phase further comprises aluminum, chromium, manganese or calcium values, or admixtures thereof, and said final aqueous phase comprises substantially all of such values.

4,499,059

IN-LINE INJECTION OF ALKALINE ABSORBANT TO REMOVE H_2S

Timothy A. Jones, Dallas, and Earl S. Snavely, Jr., Arlington, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 16, 1983, Ser. No. 552,240
Int. Cl.[3] **C01B** *17/05;* **B01D** *53/34*
U.S. Cl. 423—226 **15 Claims**



1. A method for removing hydrogen sulfide from a hydrogen sulfide-contaminated gas stream, comprising:
supplying a hydrogen sulfide-containing gas to a pipe at a velocity so that said gas has a Reynolds number of at least 150,000;
injecting an alkaline liquid into said pipe at a Weber number of at least about 16 to absorb hydrogen sulfide from said gas stream; and
separating said injected liquid from said gas stream.

4,499,060

PROCESS FOR REMOVING HYDROGEN SULFIDE FROM GASES, PARTICULARLY COAL DISTILLATION GASES

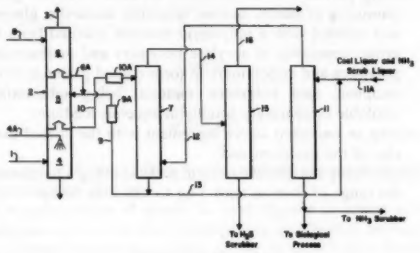
Horst Ritter, Essen, and Edmund-Theo Herpers, Bochum, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Feb. 4, 1983, Ser. No. 463,678

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204907

Int. Cl.³ C01B *17/16, 31/20*

U.S. Cl. 423—232 7 Claims



1. A process for removing hydrogen sulfide from gases, particularly coal distillation gases, said process including the steps of:

washing said gases with ammoniacal liquor to remove hydrogen sulfide,

thereafter further washing said gases in a fine purification stage with an aqueous washing solution having an effective alkaline constituent selected from the group consisting of caustic soda and caustic potash, to further remove hydrogen sulfide,

stripping hydrogen sulfide from said washing solution with vapors including carbon dioxide,

producing said vapors by treating a subflow of said washing solution in an ammonia separator wherein sodium or potassium carbonate is also produced, and

feeding the stripped hydrogen sulfide to a deacidifier.

6. The process according to claim 1 wherein said step of further washing comprises scrubbing said gases in each of two consecutive fine scrubbing states, operating a second of said scrubbing stages with freshly-charged washing solution, and operating a first of said scrubbing stages with the recycled washing solution recovered from said step of stripping hydrogen sulfide.

4,499,061

STRONTIUM FERRITE BORATE

Howard L. Glass, Orange, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 3, 1983, Ser. No. 519,796

Int. Cl.³ C01B *33/20*

U.S. Cl. 423—277 1 Claim

1. A compound of the formula

$$(Sr_{1-x}Pb_x)_3Fe_2O_{7-y}B_2O_3$$

wherein lead substitutes for strontium in varying amounts, wherein said compound has a cubic crystal structure of lattice constant approximately 15.2 angstroms, wherein x can vary from zero to 0.087, and wherein y can vary from zero to two to account for the variation in oxygen content associated with the variable valence of iron.

4,499,062

HYDROTHERMAL DECOMPOSITION OF ALUMINUM SILICATES

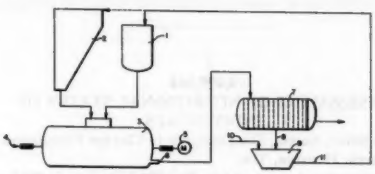
Peter Christophliemk; Rudolf Novotny, both of Düsseldorf; Jürgen von Laufenberg, Haan, and Josef Sadlowsky, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 499,037

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303515

Int. Cl.³ C01B *33/32*

U.S. Cl. 423—332 11 Claims



1. A process for the hydrothermal decomposition of aluminum silicates and alkali aluminum silicates with aqueous sodium hydroxide solution in the presence of soluble silicates comprising the steps of:

(a) forming a reaction mixture of

(i) an aqueous solution containing from about 20 to about 50% by weight of NaOH,

(ii) at least one silicate selected from the group consisting of an aluminum silicate and an alkali aluminum silicate, and

(iii) at least one hydrothermally decomposable silicate component

wherein the ratio by weight of SiO_2 to Al_2O_3 in the mixture is at least 30:1, and the ratio by weight of SiO_2 to Na_2O in the mixture is at least 1.5:1; and

(b) heating the reaction mixture at a temperature of from about 180° to about 250° C. under the saturated steam pressure corresponding to said temperature.

4,499,063

PREPARATION OF SILANE, SiH_4

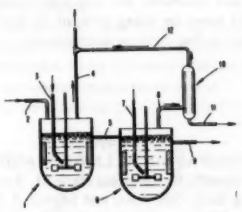
Jean Grosbois, L'Isle Adam; Serge Jacubert, Viroflay, and Jean-Michel Verdier, Paris, all of France, assignors to Rhone-Poulenc Specialities Chimiques, Courbevoie, France

Filed Sep. 27, 1983, Ser. No. 536,240

Claims priority, application France, Sep. 30, 1982, 82 16434

Int. Cl.³ C01B *33/04*

U.S. Cl. 423—347 14 Claims



1. A process for the preparation of essentially pure silane, comprising (i) reacting chlorosilane with lithium hydride in a mixture of molten salts which comprises lithium chloride and potassium chloride, in a discrete first reaction zone, said mixture of molten salts being essentially eutectic in composition, the amount of chlorosilane being at least 5% less than that

amount stoichiometrically required for reaction with the lithium hydride, and the amount of lithium hydride comprising at most 20 mole % of said mixture of molten salts, (ii) recovering product silane from said discrete first reaction zone, (iii) transferring said mixture of molten salts comprising unreacted lithium hydride dissolved therein from said discrete first reaction zone to a discrete second reaction zone, (iv) reacting chlorosilane with said unreacted lithium hydride dissolved in said mixture of molten salts in said discrete second reaction zone, the amount of chlorosilane being at least 2% in excess of that amount stoichiometrically required for reaction with said unreacted lithium hydride, and (v) recovering product silane from said discrete second reaction zone.

4,499,064

ASSESSMENT OF NUTRITIONAL STATUS OF INDIVIDUALS

William Shive, Austin, Tex., assignor to Clayton Foundation for Research, Houston, Tex.

Continuation-in-part of Ser. No. 384,822, Jun. 3, 1982, abandoned. This application May 6, 1983, Ser. No. 492,308

Int. Cl.[3] **G01N** *1/00, 33/48;* **C12Q** *1/00;* **C12N** *5/00*

U.S. Cl. 424—2 **20 Claims**

1. A cell culture medium effective for lymphocyte assay of nutritional and biochemical status of cells from human beings comprising,

a buffered, serum-free solution containing the following ingredients in a range of minimal amounts effective for a maximal dose response to amounts less than inhibitory and toxic concentrations thereof,

a carbohydrate selected from the group consisting of glucose and a compound biologically capable of producing glucose in the cells,

a biologically usable form of pantothenic acid,

choline or a biological usable form of a substance capable of producing choline in the cells,

inorganic ions comprising chloride, phosphate, calcium, magnesium, potassium, sodium, and iron in a biologically utilizable form,

deionized water, and

a mitogen in an amount effective to stimulate the lymphocytes being assayed,

said buffered, serum-free solution having a pH from about 6.8 to 7.6,

said cell culture medium characterized by being effective to determine nutritional and biochemical deficiencies, inadequacies, and imbalances of the lymphocytes when supplemented with a nutrient supplement selected from the group consisting of biological utilizable forms of amino acids and vitamins, the nutrient being tested for being omitted from or being present in limiting or inhibitory amounts in the nutrient supplement.

4,499,065

CHYMOPAPAIN ALLERGEN AND METHOD

Emanuel Calenoff, Burlingame; Ruth M. Jones, Redwood City; Yuh-Geng Tsay, San Jose, and Myron A. Beigler, Los Altos Hills, all of Calif., assignors to Axonica, Inc., Mt. View, Calif.

Filed Apr. 29, 1983, Ser. No. 489,898

Int. Cl.[3] **A61K** *39/35, 49/00;* **C12N** *9/99, 9/50*

U.S. Cl. 424—9 **14 Claims**

1. A chymopapain derivative, the enzymatic activity thereof being less than 5% of the enzymatic activity of natural chymopapain, and the allergenic activity being at least 90% of the allergenic activity of the natural chymopapain.

4,499,066

PHARMACEUTICAL SUSTAINED-RELEASE COMPOSITIONS

Luigi Moro, Cairate; Grazia Maffione, Milan; Guido Neri, Milan, and Alessandro Rigamonti, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Jul. 30, 1982, Ser. No. 403,475

Claims priority, application Italy, Aug. 5, 1981, 23374 A/81

Int. Cl.[3] **A61K** *9/26, 9/32*

U.S. Cl. 424—19 **10 Claims**

1. A process for preparing a pharmaceutical sustained-release composition formulated as tablets, comprising:

coating particles of an excipient selected from the group consisting of starch, lactose, mannitol, saccarose, glucose, and sorbitol with a polymeric material selected from the group consisting of acrylate polymers and methacrylate polymers and copolymers to form coated granules of the excipient, said polymeric material being substantially insoluble or sparingly soluble in aqueous medium;

mixing an uncoated active ingredient with the coated granules of the excipient and

compressing the mixture to form tablets having a hardness in the range of from at least 5 kg to less than 20 kg.

4,499,067

ORAL COMPOSITIONS COMPRISING N^G-ACYL DERIVATIVES OF ARGININE

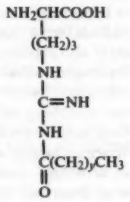
Steven B. Silbering, Plainsboro, and Tibor Sipos, Lebanon, both of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Aug. 26, 1982, Ser. No. 412,048

Int. Cl.[3] **C07C** *129/12;* **A61K** *7/18, 7/22*

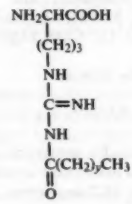
U.S. Cl. 424—52 **32 Claims**

1. N^G-acyl derivatives of arginine having the formula:



where y is an integer of from 0 to 28, and the pharmaceutically acceptable salts thereof.

12. A composition of matter for oral hygiene to inhibit acid production by microorganisms in the oral cavity comprising an effective amount, in a pharmaceutically acceptable carrier, of an N^G-acyl derivative of arginine having the formula;



wherein y is an integer of from 0 to 28, or a pharmaceutically acceptable salt thereof.

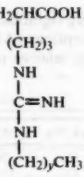
4,499,068

ORAL COMPOSITIONS COMPRISING N^G-ALKYL DERIVATIVES OF ARGININE

Steven B. Silbering, Plainsboro, and Tibor Sipos, Lebanon, both of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

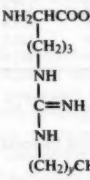
Filed Aug. 26, 1982, Ser. No. 412,365
Int. Cl.[3] C07C 129/12; A61K 7/18, 7/22
U.S. Cl. 424—52 24 Claims

1. N^G-alkyl derivatives of arginine having the formula:



where y is an integer of from 9 to 19, and the pharmaceutically acceptable salts thereof.

8. A composition of matter for oral hygiene to inhibit acid production in the oral cavity comprising an effective amount, in a pharmaceutically acceptable carrier, of an N^G-alkyl derivative of arginine having the formula;



wherein y is an integer of from 9 to 19, or a pharmaceutically acceptable salt thereof.

4,499,069

ANTIPERSPIRANT EMULSION

Thomas J. Krafton, South Hampton, N.H., assignor to The Gillette Company, Boston, Mass.

Filed Feb. 7, 1983, Ser. No. 464,663
Int. Cl.[3] A61K 7/32, 7/38
U.S. Cl. 424—66 15 Claims

1. A stable antiperspirant emulsion consisting essentially of:

(a) from about 5% to about 25% of an antiperspirant salt of aluminum or zirconium or combinations thereof,

(b) from about 15% to about 25% of a volatile cyclic silicone,

(c) from about 2% to about 10% of a low pH-stable emulsifier mixture which comprises polyethylene glycol (21) stearyl ether and a lipophilic co-emulsifier such that the HLB of the emulsifier mixture is more than 7.5 and less than 9.9, and

(d) from about 35% to about 78% of water, said percentages being by weight based on the total weight of the composition.

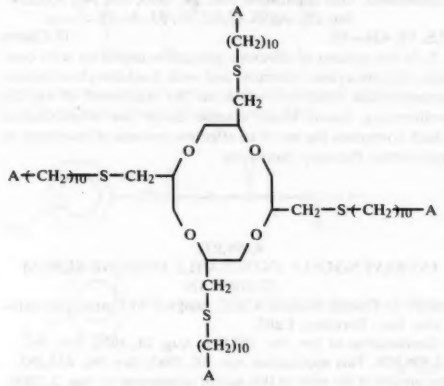
4,499,070

TENSIO-ACTIVE POLYPOD COMPOUNDS, PROCESS FOR PREPARING THEM AND COMPOSITIONS CONTAINING THEM

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 266,992, May 26, 1981, Pat. No. 4,362,714, which is a division of Ser. No. 56,204, Jul. 10, 1979, Pat. No. 4,290,956. This application Aug. 14, 1982, Ser. No. 418,074
Claims priority, application France, Jul. 13, 1978, 78 21081
Int. Cl.[3] A61K 7/06
U.S. Cl. 424—70 4 Claims

1. Dye composition for the hair, said composition comprising water or a hydroalcoholic medium, a cosmetically effective quantity of one or several compounds of the formula:



wherein A refers to a cationic, anionic, zwitterionic or nonionic hydrophile block which comprises one or more groupings, identical or different, selected from the group consisting of amine, ammonium, ammonio alkyl carboxylate, ammonio alkyl sulfonate, carboxylic amide, ether, thioether, hydroxyl, carboxylic ester and carboxylic acid grouping, and a dye for hair.

4,499,071

SYNERGISTIC PRESERVATIVE COMPOSITIONS

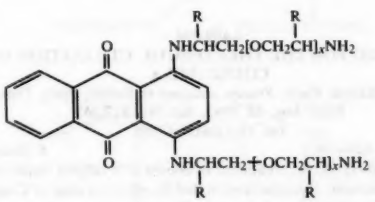
Gayle E. Borovian, Dover, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 378,372, May 14, 1982, Pat. No. 4,454,146. This application Feb. 2, 1984, Ser. No. 576,286
Int. Cl.[3] A01N 33/02, 41/02, 43/80; A61K 31/74
U.S. Cl. 424—78 35 Claims

1. A preservative comprising:

(a) a first component selected from the group consisting of a mixture of 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one in a ratio of about 5:1 to 1:5, benzisothiazalone, and mixtures thereof; and

(b) a second component having the following formula:



wherein x is about 2 to 33 and R is H or CH_3 and mixtures thereof;

wherein the weight ratio of said second component to said first component is 1000:1 to 1:10, the combination acting to kill or inhibit the growth of bacteria.

4,499,072

PROCESS FOR TREATING DISEASES WITH ODC INHIBITORS

Sai P. Sunkara, and Nellikunja J. Prakash, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 445,349, Nov. 29, 1982, abandoned. This application Jan. 24, 1983, Ser. No. 460,224

Int. Cl.[3] **A61K** *45/02, 31/85, 31/15*

U.S. Cl. 424—85 **15 Claims**

1. In the process of effecting polyamine depletion with ornithine decarboxylase inhibitors and with S-adenosylmethionine decarboxylase inhibitors useful in the treatment of rapidly proliferating tumor tissue disease states the improvement which comprises the use of an effective amount of interferon in conjunctive thereapy therewith.

4,499,073

INTRAVENOUSLY INJECTABLE IMMUNE SERUM GLOBULIN

Robert A. Tenold, Benicia, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation of Ser. No. 295,916, Aug. 24, 1981, Pat. No. 4,396,608. This application Apr. 18, 1983, Ser. No. 485,683

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.[3] **A23J** *1/06;* **A61K** *39/35, 37/04;* **C07G** *7/00*

U.S. Cl. 424—85 **7 Claims**

1. A pharmaceutical composition comprising a solution, in a pharmaceutically acceptable aqueous carrier, of an immune serum globulin that is substantially free from chemical modification, said solution having a physiologically acceptable tonicity and an ionic strength such that the solution at 5 percent protein concentration has a nephelometric reading less than 15 NTU and a pH which ranges from about 3.5 to 5.0 to maintain, without significant change during storage at room temperature for extended periods, the monomer content at greater than about 90% and the actual anticomplement activity of the immune serum globulin at a level greater than about 2 mg protein/C'H50 unit wherein one C'H50 unit is defined as the amount of protein capable of inactivating 50% of complement in an optionally titered complement and hemolysin system such that the composition is intravenously administrable and has a buffer capacity which causes very little disruption, if any, of the physiological pH when compared with the administration of an immune serum globulin at equivalent pH but essentially buffered.

4,499,074

METHOD FOR THE THERAPEUTIC UTILIZATION OF COENZYME A

Francis Kirsch, Paris, France, assignor to Sanofi, Paris, France

Filed Aug. 29, 1983, Ser. No. 527,361

Int. Cl.[3] **A61K** *37/48*

U.S. Cl. 424—94 **6 Claims**

1. Method for the treatment of edema in a subject requiring such treatment, characterized in that an effective dose of Coenzyme A is administered parenterally to the said subject.

4,499,075

ANTIBIOTIC AGENTS FROM *S. COERULEORUBIDUS*, RUBIDUS

May D. Lee, Monsey; John H. Martin, New City; Donald B. Borders, Suffern, all of N.Y.; Raymond C. Yao, Carmel, Ind., and Raymond T. Testa, Cedar Grove, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 25, 1982, Ser. No. 362,002

Int. Cl.[3] **A61K** *35/00;* **C12P** *1/06*

U.S. Cl. 424—118 **9 Claims**

1. The antibiotic LL-BO2964α wherein the substantially pure form:

(a) exhibits the following significant carbon-13 nuclear magnetic resonance absorptions (Abs) in parts per million in dimethyl sulfoxide-d_6 relative to the absorption of tetramethyl silane:

Peak No.	Abs	Peak No.	Abs	Peak No.	Abs
1	13.9	16	96.7	31	137.3
2	18.4	17	102.1	32	
3	27.3	18		33	138.9
4		19		34	139.6
5	29.3	20	112.9	35	140.4
6	30.5	21	113.4	36	150.3
7	33.9	22	116.2	37	152.9
8	48.5	23		38	156.9
9	49.5	24	119.3	39	157.3
10	50.4	25	119.9	40	162.7
11	55.0	26		41	166.4
12	69.9	27	127.6	42	170.1
13	71.4	28	128.6	43	171.0
14	73.0	29	129.0	44	
15	91.5	30	135.8	45	173.1

(b) has an optical rotation $[\alpha]_D^{25}$ of $-10°$ (C being 2.77%, water);

(c) has an elemental analysis (percent) of about: C, 50.89; H, 5.67; N, 14.44; S, 0.00;

(d) has a carbon-13 nuclear magnetic resonance spectrum in dimethyl sulfoxide-d_6 substantially as shown in FIG. 5;

(e) produces uracil, alanine, beta-alanine, glycine, m-tyrosine, 3-N-methylamino-2-aminobutyric acid and a hydantoin formed from alanine and tyrosine when hydrolyzed by acid; and

(f) has an infrared absorption spectrum in KBr substantially as shown in FIG. 1, an ultraviolet spectrum in water substantially as shown in FIG. 2, a proton nuclear magnetic resonance spectrum in dimethyl sulfoxide-d_6 substantially as shown in FIG. 3, and a proton nuclear magnetic resonance spectrum in dimethylsulfoxide-d_6 with added deutero-trifluoroacetic acid substantially as shown in FIG. 4.

4,499,076

ELEMENTAL DIETS FOR LIVER DISEASES

Hiroyuki Ohashi, Kawasaki; Ikuo Ohara, Yokohama, and Toru Takami, Yokosuka, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 453,832

Claims priority, application Japan, Jan. 22, 1982, 57-8599

Int. Cl.[3] **A61K** *31/07, 31/12, 31/23, 31/40, 31/44, 31/59, 31/68, 31/70, 31/195, 31/355, 31/365, 31/415, 31/455, 31/685, 33/06, 33/14, 33/26, 33/34;* **A61N** *43/78*

U.S. Cl. 424—143 **9 Claims**

1. An elemental diet which comprises essential amino acids, carbohydrates, fats, vitamins and minerals together with alanine, arginine, glycine, histidine, proline and serine in such composition as shown below:

	Mole %
Amino Acid	Mole %
Isoleucine	13.25–16.19

-continued

Amino Acid	Mole %
	Mole %
Leucine	16.25–19.87
Valine	13.86–16.94
Lysine	5.36–6.55
Methionine	0.79–0.97
Phenylalanine	0.71–0.87
Threonine	3.68–4.50
Tryptophan	0.27–0.33
Alanine	11.04–13.50
Arginine	10.02–12.24
Glycine	5.76–7.04
Histidine	1.99–2.43
Proline	4.56–5.58
Serine	2.46–3.00
Total	100

4,499,077

ANTI-MICROBIAL COMPOSITIONS AND ASSOCIATED METHODS FOR PREPARING THE SAME AND FOR THE DISINFECTING OF VARIOUS OBJECTS

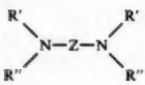
Richard F. Stockel, 475 Rolling Hills Rd., Bridgewater, N.J. 08807, and Murray Jelling, 21 Spring Hill Rd., Roslyn Heights, N.Y. 11577

Continuation of Ser. No. 231,257, Feb. 3, 1981, abandoned. This application Mar. 1, 1983, Ser. No. 471,011

Int. Cl.[3] **A61K** *33/20, 31/14;* **A01N** *33/12, 59/00*

U.S. Cl. 424—149 **5 Claims**

1. An anti-microbial composition suitable for disinfecting lenses comprising in aqueous solution 0.001 to 0.05% by weight of an oxidizing compound which is stabilized chlorine dioxide and 0.001 to 0.05% by weight of a polymeric germicide selected from the group consisting of, (a) an anti-microbial polymeric quaternary ammonium compound made by condensing a mixture of two or more difunctional tertiary amines and a molar quantity of 1,4-dichloro-2-butene that is equal to the molar sum of the difunctional tertiary amines in the mixture, the difunctional tertiary amines being of the type



where Z consists of from one to three divalent aliphatic radicals of 2 to 10 carbon atoms which may contain 0 to 2 double bonds or 0 to 2 hydroxy substituents, wherein R′ and R″ are either the same or different and wherein they be (i) primary or secondary alkyls having 1 to 20 carbon atoms, where the sum of the carbon atoms in R′ and R″ is no greater than 36, (ii) hydroxy or dihydroxy derivatives of the aforesaid primary or secondary alkyls, (iii) benzyl, (iv) alkyl benzyl or (v) combined with N to form a heterocyclic group of either 5, 6, or 7 atoms, and (b) a polydiguanide which is polymeric hexamethylene diguanide.

4,499,078

METHODS FOR COUNTERACTING THE DELETERIOUS EFFECTS OF SODIUM CHLORIDE

Emanuel Revici, 1111 Park Ave., New York, N.Y. 10028

Filed Apr. 22, 1983, Ser. No. 487,899

Int. Cl.[3] **A61K** *33/14*

U.S. Cl. 424—153 **3 Claims**

1. A method for counteracting the adverse effects of sodium chloride on the human body which comprises administering to said body a composition containing sodium chloride and a magnesium compound containing bivalent negative sulfur where said magnesium compound is present in an amount effective to counteract the adverse effects of said sodium chloride.

4,499,079

CARBOXY AND SUBSTITUTED CARBOXY ALKANOYL AND CYCLOALKANOYL PEPTIDES

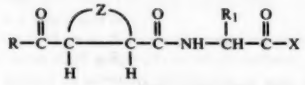
Eric M. Gordon, and Harold N. Weller, III, both of Pennington, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 18, 1982, Ser. No. 442,681

Int. Cl.[3] **A61K** *37/00, 31/40, 31/47, 31/44;* **C07C** *103/52;* **C07D** *209/18, 209/04, 217/00, 215/00, 215/20, 401/00;* **A01N** *43/40*

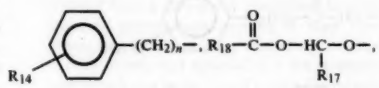
U.S. Cl. 514—2 **23 Claims**

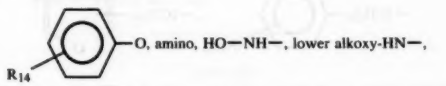
1. A compound of the formula



and a pharmaceutically acceptable salt thereof wherein:

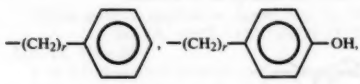
R is hydroxy, lower alkoxy, lower alkyl,

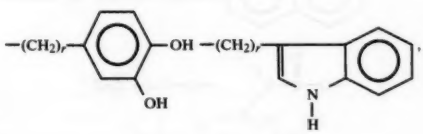


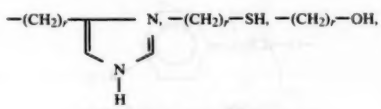


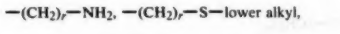
or MO—;

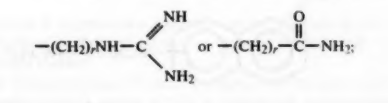
R_1 is hydrogen, lower alkyl, halo substituted lower alkyl,

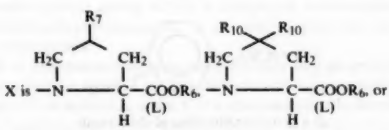












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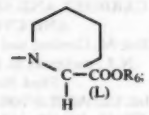
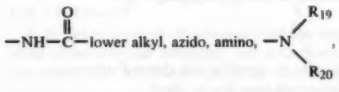
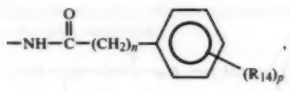
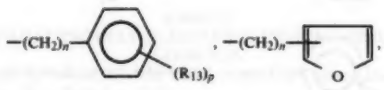
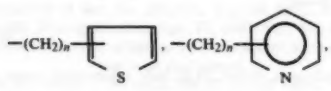


R_7 is hydrogen, lower alkyl, halogen, keto, hydroxy,

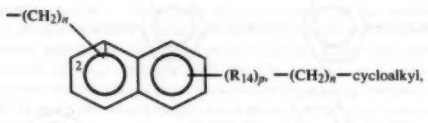


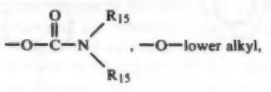


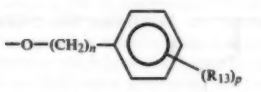




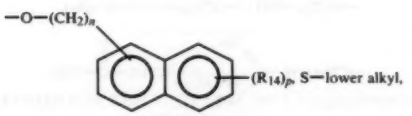
a 1- or 2-naphthyl of the formula

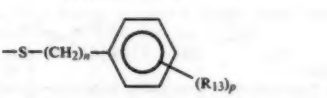






a 1- of 2-naphthyloxy of the formula





or a 1- or 2-napthtylthio of the formula

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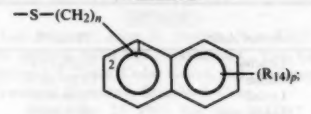


R_{10} is halogen or —Y—R_{16};

R_{13} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl;

R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

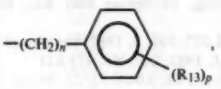
n is zero, one, two, three, or four;

p is one, two or three provided that p is more than one only if R_{13} or R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;

R_{15} is hydrogen or lower alkyl of 1 to 4 carbons;

Y is oxygen or sulfur;

R_{16} is lower alkyl of 1 to 4 carbons,



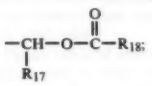
or the R_{16} groups join to complete an unsubstituted 5- or 6-membered ring or said ring in which one or more of the carbons has a lower alkyl of 1 to 4 carbons or a di(lower alkyl of 1 to 4 carbons) substituent;

r is an integer from 1 to 4;

R_{19} is lower alkyl, benzyl, or phenethyl;

R_{20} is hydrogen, lower alkyl, benzyl or phenethyl;

R_6 is hydrogen, lower alkyl, benzyl, benzhydryl, salt forming ion, or



R_{17} is hydrogen, lower alkyl, cycloalkyl, or phenyl;

R_{18} is hydrogen, lower alkyl, lower alkoxy or phenyl;

M is a salt forming ion; and

Z completes a cycloalkyl ring of 3 to 10 carbons, said cycloalkyl ring in which one of the carbon atoms is substituted by a lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, halo, trifluoromethyl, or hydroxy group, a cycloalkenyl ring of 5 to 7 carbons, or a cycloalkadienyl ring of 6 or 7 carbons.

4,499,080

SYNTHETIC ST TOXIN, PROCESS FOR ITS PREPARATION AND ITS USE AS A VACCINATING AGENT

Anabela Duflot, Vanves; Hélène Gras, Hem; André Tartar, Vitry-en-Artois; Edith Duflot, Cachan, and Patrice Boquet, Creteil, all of France, assignors to Institut Pasteur, Paris, France

Filed Apr. 26, 1983, Ser. No. 488,712

Claims priority, application France, Apr. 26, 1982, 82 07179

Int. Cl.³ A61K *37/00*; **C07C** *103/52*

U.S. Cl. 514—12 **34 Claims**

1. A peptide (P) n free of intramolecular disulfide bridges and free of intramolecular disulfied bridges and capable of inducing in vivo antibodies against ST enterotoxins comprising 4n to 18n amino-acids, wherein - n is equal to 1 or 2, and when

n is equal to 1, the peptidic sequence P is contained in the following peptidic chain:

Asn—Thr—Phe—Tyr—Cys—Cys—Glu—Leu—Cys—
—Cys—A—Pro—Ala—Cys—Ala—Gly—
(C—ter)
Cys—T(I)
(N—ter)

in which A and T each represent Tyr or Asn; and A and T are not the same wherein all except one the thiol groups of the cysteyl residues present in the molecule are protected by a group which is stable under biological conditions, said one of said thiol groups being in the form of a free SH group or protected by a group which is unstable under biological conditions; and, when n is equal to 2, the peptidic sequence P-P is constituted by 2 peptidic sequences P, which are identical or different, each sequence comprising 4 to 18 amino-acids, contained in the peptidic chain of formula (I), the 2 peptidic sequences P being connected together

through a disulfide linkage established between the sulfur atom of the cysteyl residues of one of the 2 sequences and the sulfur atom of the cysteyl residues of the other sequence;

or through a linkage established between the carboxyl group of the 2 peptidic sequences P and the amino group of the other sequences; and wherein one of the thiol groups not engaged in a disulfide linkage, being in the form of a free SH group or protected by a group that is unstable under biological conditions and the other thiol group of the possible cysteyl residues being protected by protective groups which are stable under biological conditions.

4,499,081

PEPTIDE COMPOUNDS

Ole D. Laerum, Bergen, Norway, assignor to Nyegaard & Co A/S, Oslo, Norway

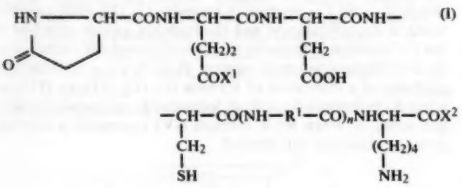
Filed Nov. 28, 1983, Ser. No. 555,840

Claims priority, application United Kingdom, Nov. 26, 1982, 8233837

Int. Cl.[3] **A61K** *37/00;* **C07C** *103/52*

U.S. Cl. 514—17 **7 Claims**

1. A compound of the formula:



(I)

(in which R^1 is the residue of glycine or D-alanine, and all other amino-acid residues are in the L-form, X^1 and X^2, which may be the same or different, are OH or NH_2 and n is 0 or 1) and their physiologically acceptable salts.

4,499,082

α-AMINOBORONIC ACID PEPTIDES

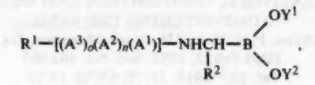
Ashokkumar B. Shenvi, and Charles A. Kettner, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1983, Ser. No. 558,362

Int. Cl.[3] **A61K** *37/00, 31/44;* **C07C** *103/52*

U.S. Cl. 514—2 **19 Claims**

1. A compound of the formula



or a physiologically acceptable salt thereof, wherein

A^1 is an amino acid of L-configuration selected from the group consisting of Ala, Pro, Gly, Glu, Leu, Lys, Phe, Ser, Val, Ile, Arg, Tyr, Thr, Asp, Asn or Gln;

A^2 and A^3 are, independently, amino acids of D or L-configuration selected from the group consisting of Ala, Arg, Asn, Asp, Cys, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;

n is 1 and o is 0 or 1;

R^1 is —H or an N-terminal protecting group;

R^2 is an alkyl group of one to six carbons, optionally comprising an aromatic substituent, or one or more in-chain bivalent groups selected from the group consisting of —O—, —CO—, —S—, —NH—, —CONH—, —CH=CH— or $—SO_2—$; and

Y^1 and Y^2 are each —H, or taken together form a moiety derived from a dihydroxy compound having at least two hydroxy groups separated by at least two connecting atoms in a chain or ring, said chain or ring comprising carbon atoms, and optionally, a heteroatom or heteroatoms which can be N, S, or O; with the proviso that where is O, R^1 cannot be —H.

4,499,083

3-O-DEMETHYL DERIVATIVES OF THE ISTAMYCIN B SERIES OF COMPOUNDS

Hamao Umezawa; Yoshiro Okami, both of Tokyo, and Shinichi Kondo, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

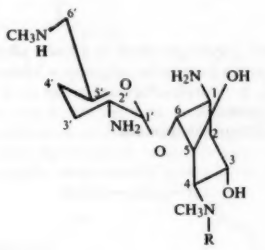
Filed Sep. 3, 1981, Ser. No. 298,844

Claims priority, application Japan, Sep. 11, 1980, 55-125334

Int. Cl.[3] **A61K** *31/71;* **C07H** *15/22*

U.S. Cl. 514—36 **5 Claims**

1. A 3-O-demethyl derivative of a compound of the istamycin B series, having the formula



(I)

wherein R represents a hydrogen atom, a glycyl group or an N-formimidoylglycyl group, or an acid addition salt or salt-hydrate thereof.

4. The compound of claim 1 wherein R represents an N-formimidoylglycyl group, which is designated 3-O-demethyl-2″-N-formimidoylistamycin B, or an acid addition salt or salt-hydrate thereof.

5. A pharmaceutical composition comprising an antibacterially effective amount of 3-O-demethyl-2″-N-formimidoylstamycin B as defined in claim 4 or a pharmaceutically acceptable acid addition salt or salt-hydrate thereof, in combination with a pharmaceutically acceptable carrier.

4,499,084

ARA-A ANTIVIRAL COMPOSITION AND METHOD OF ADMINISTERING THE SAME

Glen J. Dixon, P.O. Box 1328, Stone Mountain, Ga. 30086

Filed Feb. 3, 1983, Ser. No. 463,467
Int. Cl.³ A61K *31/70*; C07H *19/16*
U.S. Cl. 514—46 **11 Claims**

5. An antiviral composition for treating herpes simplex virus disease in humans comprising a solvent carrier which will translocate throughout the body and penetrate cell walls and an antiviral agent which interferes with viral deoxynucleic acid synthesis causing inhibition of viral maturation, wherein the solvent carrier includes dimethyl sulfoxide and water and wherein the antiviral agent is purine analog of ara-A and is selected from the group consisting of acyclovir and ribavirin.

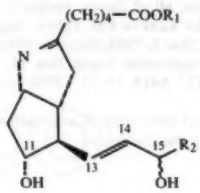
4,499,085

METHOD OF ANOXIA TREATMENT USING PROSTAGLANDIN ANALOGUES

Yoshinobu Masuda, Katano, Japan, assignor to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Apr. 29, 1983, Ser. No. 490,223
Claims priority, application Japan, Apr. 30, 1982, 57-74175; Oct. 20, 1982, 57-185022
Int. Cl.³ A61K *31/70, 31/40*
U.S. Cl. 514—58 **18 Claims**

1. A method for the prevention or treatment of anoxia of brain cells in a mammalian host which comprises administering to a host subject to, or suffering from said anoxia, an effective amount of a prostaglandin derivative selected from a PGI_1 derivative of the formula:

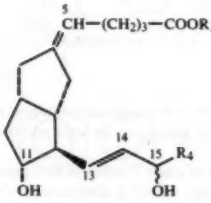


(I)

wherein

R_1 represents a hydrogen atom or a lower alkyl group and R_2 represents a 2-methylhexyl group, a 3-propylcyclopentyl group, a 3-butylcyclopentyl group or a 4-propylcyclohexyl group,

a PGI_2 derivative of the formula:

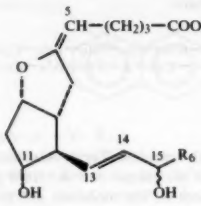


(II)

wherein

R^3 represents a hydrogen atom or a lower alkyl group and R_4 represents a 2-methylhexyl group, a cyclopentyl group, a 3-propylcyclopentyl group or a cyclohexyl group,

a PGI_2 derivative of the formula:

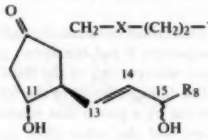


(III)

wherein

R_5 represents a lower alkyl group and R_6 represents a pentyl group, a 1-methylpentyl group, a 1-methyl-5-chloropentyl group, a 2-methyl-5-chloropentyl group, a 3-ethylcyclopentyl group, a 3-propylcyclopentyl group, a 3-butylcyclopentyl group, a 3-(2-chloroethyl)cyclopentyl group, a cyclohexyl group, a 4-ethylcyclohexyl group or a cyclohexylmethyl group, or

a PGE_1 derivative of the formula:



(IV)

wherein

X represents a methylene group or a carbonyl group, and (i) when X represents a methylene group, Y represents an ethylene group or a trans-vinylene group, R_7 represents a carboxyl group or a lower alkoxycarbonyl group and R_8 represents a 2-methylhexyl group or a 1-cyclohexylethyl group, and (ii) when X represents a carbonyl group, Y represents an ethylene group, R_7 represents a carboxyl group, a lower alkoxycarbonyl group, a glycoloyl group or a hydroxymethyl group and R_8 represents a 2-methylhexyl group, a cyclopentyl group, a 3-propylcyclopentyl group or a 3-butylcyclopentyl group,

the double bonds between C_{13}–C_{14} in formulae (I), (II), (III) and (IV) being trans, the configuration at C_5 in formulae II and III being E or Z or a mixture thereof, the hydroxy groups attached to the C_{11} position in formulae (I), (II), (III) and (IV) being in α-configuration and the hydroxy groups attached to the C_{15} position in formulae (I), (II), (III) and (IV) being in α- or β-configuration, or a mixture thereof, or a cyclodextrin clathrate of a derivative of formula (I), (II), (III) or (IV) or, when R_1 in formula (I) or R_3 in formula (II) represents a hydrogen atom, or when R_7 in formula (IV) represents a carboxy group, a non-toxic salt thereof.

4,499,086

MEDICATION FOR TREATMENT OF POISON OAK IRRITATION AND INFLAMMATION

Frederick G. Garren, Unit 16, 2525 NE. Stephens, Roseburg, Oreg. 97470

Filed Feb. 18, 1983, Ser. No. 467,828
Int. Cl.³ A61K *35/78*
U.S. Cl. 424—195.1 **2 Claims**

1. Process of alleviating and curing of poison oak irritation and affliction, respectively, of the skin or mucous membrances which comprises treating, at least once, said irritated or afflicted areas of the skin or mucous membranes with a therapeutic composition which comprises (a) a pharmaceutically acceptable carrier and (b) an extract from the leaves or buds or both of *Ceanothus thyrsiflorus* containing an effective amount of at least one therapeutically active ingredient which is effective in the alleviation of and speeding up of the curing of

poison oak irritation or inflammation, respectively, of the skin or mucous membranes, said extract having been achieved using an extractant selected from the group consisting of water, ethyl ether, acetone, chloroform, methanol, ethanol, methyl ethyl ketone, ethyl acetate, ethyl formate, and a mixture of water and one of said extractants.

4,499,087

7-PHENYL-7-PHENOXYMETHYL-HEXAHYDRO-1,4-OXAZEPINES AND THEIR USE

Hans J. Treiber, Bruehl; Hans P. Hofmann, Limburgerhof; Horst Kreiskott, Wachenheim; Hans-Juergen Teschendorf, Dudenhofen, and Martin Traut, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

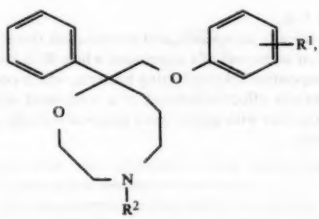
Filed Nov. 21, 1983, Ser. No. 554,097

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3242923

Int. Cl.[3] **C07D** *267/10;* **A61K** *31/55*

U.S. Cl. 514—211 **4 Claims**

1. A 7-phenyl-7-phenoxymethyl-hexahydro-1,4-oxazepine of the formula I



I

where R^1 is hydrogen, chlorine or methoxy and R^2 is hydrogen or methyl, and its salts with physiologically tolerated acids.

4. The method of treating psychological disturbances in a patient suffering therefrom, which comprises administering an effective amount of a 7-phenyl-7-phenoxymethyl-hexahydro-1,4-oxazepine of the formula I according to claim **1**.

4,499,088

CEPHEM COMPOUNDS

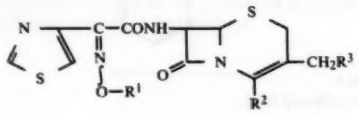
Takao Takaya, Kawanishi; Hisashi Takasugi, Osaka, and Hideaki Yamanaka, Hirakata, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 4, 1983, Ser. No. 455,573

Int. Cl.[3] **A61K** *31/545;* **C07D** *501/56*

U.S. Cl. 514—202 **10 Claims**

1. A compound of the formula:



wherein

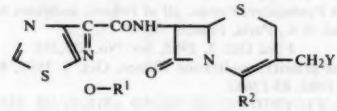
R^1 is carboxy (C_1–C_6) alkyl or esterified carboxy (C_1–C_6) alkyl,

R^2 is carboxy or an esterified carboxy group, and

R^3 is (C_1–C_6) alkanoylamino, (C_1–C_6) alkanesulfonyl, triazolylthio, tetrazolylthio having (C_1–C_6) alkyl, pyridazinylthio having (C_1–C_6) alkyl, thiadiazolylthio having (C_1–C_6) alkyl, triazolopyridazinylthio or tetrazolopyridazinylthio, and pharmaceutically acceptable salts thereof.

9. An antibacterial composition comprising an effective amount of a compound of claim **1** in association with a pharmaceutically acceptable substantially non-toxic carrier or excipient.

10. A compound of the formula:



wherein

R^1 is carboxy(C_1–C_6)alkyl or esterified carboxy(C_1–C_6)alkyl,

R^2 is carboxy or an esterified carboxy group, and

Y is halogen

or a salt thereof.

4,499,089

2-ALKYLTHIO-1-AMINOALKYL-2-PYRROLINE-3-CARBONITRILES, COMPOSITIONS AND USE

Hubert Barth, Emmendingen; Johannes Hartenstein, Stegen-Wittental; Gerhard Satzinger, Denzlingen; Edgar Fritschi, St. Peter; Volker Ganser, Freiburg; Horst-Dietmar Tauschel, Ettenheim, and Günter Wolf, Freiburg, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

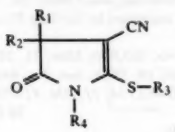
Filed May 10, 1984, Ser. No. 608,828

Claims priority, application Fed. Rep. of Germany, May 14, 1983, 3317653

Int. Cl.[3] **A61K** *31/40, 31/54;* **C07D** *417/06, 207/277*

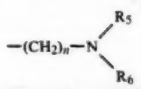
U.S. Cl. 514—222 **15 Claims**

1. A compound of the formula



(I)

in which R_1 and R_2 are the same or different and signify an optionally substituted aromatic ring, R_3 signifies a straight or branched chain hydrocarbon radical of one to four carbon atoms, R_4 signifies an aminoalkyl group of the formula



(II)

in which n is equal to two or three and R_5 and R_6 are the same or different and individually signify hydrogen, a straight or branched chain alkyl group of one to four carbon atoms or, together with the nitrogen atom to which they are attached, a ring with possibly further heteroatoms or a pharmaceutically acceptable acid-addition salt thereof.

14. A pharmaceutical composition for the prophylaxis and therapy of thrombotic states comprising an effective amount of a compound according to claim **1** together with a pharmaceutically acceptable carrier.

4,499,090

N-(5-AMINOMETHYL-2-OXAZOLIN-2-YL)-N'-PHENYLUREAS, COMPOSITIONS AND USE

Marie-Hélène Creuzet, Bordeaux; Claude Feniou, Pessac; Christian Jarry, Artigues Près Bordeaux; Gisèle Prat, Talence, and Henri Pontagnier, Pessac, all of France, assignors to Societe Cortial, S.A., Paris, France

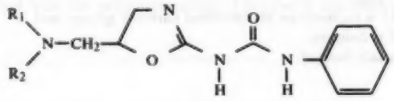
Filed Oct. 5, 1983, Ser. No. 539,285

Claims priority, application France, Oct. 5, 1982, 82 16783; Aug. 4, 1983, 83 13013

Int. Cl.[3] **C07D** *263/28, 295/14;* **A61K** *31/42, 31/535*

U.S. Cl. 514—210 **10 Claims**

1. A compound having the general formula:



wherein R_1 and R_2 independently represent an alkyl radical of C_1 to C_4, or a carbocyclic alkyl radical having less than 4 rings, or a carbocyclic radical having less than 4 rings; R_1 and R_2 can form, with the nitrogen atom to which they are attached, a 4 to 7 member heterocycle containing 1 or 2 nitrogen atoms and 1 or 0 oxygen atoms, said heterocycle can be substituted by R with R being an alkyl radical of C_1 to C_4, allyl, benzyl, pyridyl, phenyl substituted or not with one or more substituents such as halogen, trihalomethyl, alkyl of C_1 to C_4, hydroxy, or alkoxy having a C_1 to C_4 alkyl radical.

4. A pharmaceutical or veterinary composition characterized in that it comprises as active principle a product as in claim **1** in association with a pharmaceutical vehicle or a suitable excipient.

4,499,091

1-AMINO (OR SUBSTITUTED AMINO)-1,4-DIHYDRO-4-OXO-6-FLUORO-7-HETERYL-QUINOLINE-3-CARBOXYLIC ACIDS AND THEIR USE AS ANTIBACTERIAL AGENTS

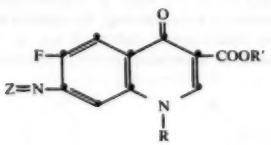
Mark P. Wentland, North Greenbush, and Denis M. Bailey, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 363,876, Mar. 31, 1982, abandoned. This application Feb. 14, 1983, Ser. No. 466,095

Int. Cl.[3] **A61K** *31/47;* **C07D** *401/04, 413/04, 417/04*

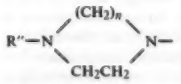
U.S. Cl. 514—254 **33 Claims**

1. A compound of the formula

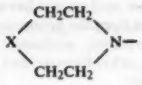


I

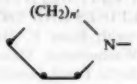
wherein R is amino, lower-alkylylamino, 2-propenylamino, N-formyl-lower-alkylamino or di-lower-alkylamino; R' is hydrogen or lower-alkyl; and Z=N— is a heterocyclic group selected from the group consisting of:



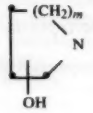
where n is 2–3, and R'' is hydrogen, lower-alkyl or acetyl;



where X is O or S;



where n' is 1–3; and



where m is 1–2;

a pharmaceutically acceptable acid-addition salt thereof; or an alkali metal or amine salt of a compound where R' is hydrogen.

30. A composition for combatting bacteria, which comprises an antibacterially effective amount of a compound according to claim **1** together with one or more pharmaceutically acceptable excipients.

4,499,092

DERIVATIVES OF 4-PHENYL QUINAZOLINE ACTIVE ON THE CENTRAL NERVOUS SYSTEM

André Hallot, St. Gely du Fesc, and Kathleen Bizière, Clapiers, both of France, assignors to Sanofi, France

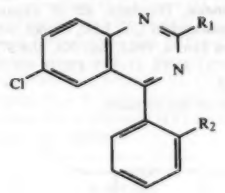
Filed Oct. 19, 1982, Ser. No. 435,230

Claims priority, application France, Oct. 21, 1981, 81 19767

Int. Cl.[3] **A61K** *31/505;* **C07D** *239/84*

U.S. Cl. 514—254 **21 Claims**

1. A compound of 4-phenyl quinazoline of the formula:



(I)

in which

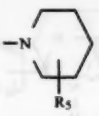
R_1 is selected from

(a) a group

in which

R_3 represents hydrogen or a group $—(CH_2)_nOH$ and R_4 represents a group $(CH_2)_nOH$ where n designates an integer equal to 2, 3 or 4;

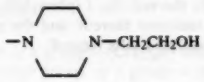
(b) a group



where

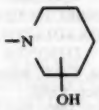
R_5 designates a group $—(CH_2)_m—OH$ (m being an integer which may vary from 0 to 2) situated in meta or para position;

(c) a group



where

R_2 represents an atom of halogen, or R_2 may be hydrogen in the case of R_1 being



the salts with pharmaceutically acceptable mineral or organic acids thereof.

11. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a tranquilizing, hypnotic or anti-epileptic effective amount of at least one compound according to claim 1.

4,499,093

INTERFERON INDUCTION METHOD

Angel S. Galabov, and Margarita H. Mastikova, both of Sofia, Bulgaria, assignors to Dso "Pharmachim", Sofia, Bulgaria

Filed Jan. 17, 1983, Ser. No. 458,262
Claims priority, application Bulgaria, Jan. 19, 1982, 55032
Int. Cl.[3] A61K *31/505*
U.S. Cl. 514—258 **2 Claims**

1. A method of treating viral infection responsive to interferon in an animal subject which comprises the step of administering to the animal subject an effective amount of dipyridamole sufficient to induce in vivo production of a pharmaceutically effective amount of the interferon.

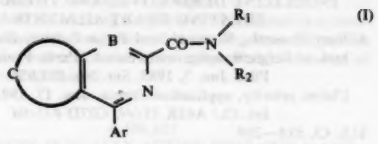
4,499,094

DERIVATIVES OF ARENE AND HETERO-ARENE CARBOXAMIDES AND THEIR USE AS MEDICAMENTS

Marie-Christine Dubroeucq, Enghien-les-Bains; Christian Renault, Taverny, and Gérard Le Fur, Plessis Robinson, all of France, assignors to Pharmuka Laboratoires, Gennevilliers, France

Filed Apr. 5, 1983, Ser. No. 482,082
Claims priority, application France, Apr. 27, 1982, 82 07217
Int. Cl.[3] A61K *31/435*; C07D *495/04*
U.S. Cl. 514—301 **11 Claims**

1. A compound of the formula:



(I)

in which R_1 and R_2 independently represent a linear or branched alkyl containing 1 to 6 carbon atoms, cycloalkyl containing 3 to 7 carbon atoms, phenyl alkyl or cycloalkyl alkyl, the alkyl part of which contains 1 to 3 carbon atoms,

R_1 and R_2 further represent alkenyl or alkynyl containing 3 to 6 carbon atoms, with the proviso that the double or triple bond is not situated in position 1-2 in relation to the nitrogen atom,

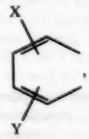
R_1 and R_2 may further represent a group of the formula $—R_3—Z—R_4$, in which R_3 represents linear or branched alkylene with 2 to 6 carbon atoms, with the proviso that at least 2 carbon atoms separate the nitrogen atom from group Z;

R_4 represents alkyl having from 1 to 4 carbon atoms and Z is oxygen or sulphur or $>N—R_5$,

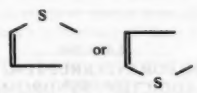
R_5 represents hydrogen or alkyl with 1 to 3 carbon atoms,

Ar represents phenyl, pyridyl or thienyl, or phenyl substituted with one or two substituents selected from halogen atoms, alkyl, alkoxy and alkylthio with 1 to 4 carbon atoms, trifluoromethyl and nitro,

A and B represent independently, N or CH—, C represents the linkage



or when A represents N and B represents CH, one of the following linkages:



X, Y represent independently, hydrogen, halogen, alkyl or alkoxy containing 1 to 3 carbon atoms, nitro or trifluoromethyl, and

represents a heterocyclic ring which is pyrrolidine, piperidine, morpholine or piperazine ring which may be substituted on the nitrogen by alkyl containing 1 to 3 carbon atoms.

11. A method of treating a warm blooded mammal for a pulmonary, renal, cardiovascular or circulatory disorder, for pathological states associated with immunological disorders, for states of aggressivity and in the application of benzodiazepines comprising administering an effective amount of the compound of claim 1.

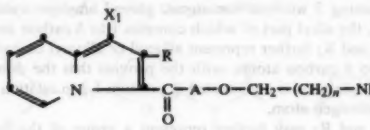
4,499,095

INDOLIZINE DERIVATIVES AND THEIR USE IN TREATING HEART AILMENTS

Gilbert Rosseels, Wemmel, and Peter Polster, Hamme-Mille, both of Belgium, assignors to Sanofi, Paris, France

Filed Jun. 7, 1983, Ser. No. 501,856
Claims priority, application France, Jun. 17, 1982, 82 10598
Int. Cl.[3] A61K *31/44;* C07D *471/04*
U.S. Cl. 514—299 13 Claims

1. An indolizine derivative corresponding to the general formula:



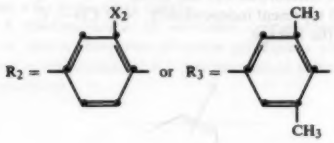
or a pharmaceutically acceptable acid addition salt thereof, wherein:

R respresents straight- or branched-chain alkyl having from 1 to 4 carbon atoms or phenyl,

R_1 represents straight- or branched-chain alkyl having from 1 to 6 carbon atoms,

X_1 represents hydrogen, chlorine, bromine, methyl or methoxy,

A represents a radical of the formula:



in which X_2 represents hydrogen, chlorine, bromine, methyl or methoxy n represents 1 or 2.

10. A pharmaceutical or veterinary composition containing, as essential active ingredient, an effective amount for inhibiting calcium translocation at the level of the cell membrane of at least one indolizine derivative as claimed in claim 1 or 2 in association with a pharmaceutical carrier or excipient therefor.

4,499,096

RAPID METHOD FOR INTERRUPTING THE NARCOTIC ADDICTION SYNDROME

Howard S. Lotsof, 330 Stanley Ave., Staten Island, N.Y. 10301

Filed Nov. 18, 1983, Ser. No. 553,138
Int. Cl.[3] A61K *31/435, 31/475*
U.S. Cl. 514—214 11 Claims

1. The method of treating heroin addiction comprising administering internally to the addict a dosage of between 6 mg and 19 mg per kg weight of the addict of ibogaine or a therapeutically active compound thereof or a mixture thereof.

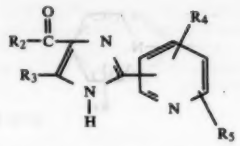
4,499,097

2-(PYRIDYL)IMIDAZOLYL KETONES

Andrew S. Tomcufcik, Old Tappan, N.J.; Walter E. Meyer, Suffern, and Nancy H. Eudy, Cornwall-on-Hudson, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 10, 1983, Ser. No. 473,939
Int. Cl.[3] C07D *401/04;* A61K *31/415*
U.S. Cl. 514—341 25 Claims

1. A compound selected from the group consisting of those of the formula:



wherein R_2 is alkyl(C_1–C_5), cycloalkyl(C_3–C_6) or phenyl, R_3 is alkyl(C_1–C_3), and R_4 and R_5 are each hydrogen, chloro or methyl with the proviso that R_4 and R_5 may not be dichloro or dimethyl; the oxime thereof; the methoxime thereof; the semicarbazone thereof; the pyridine-1-oxide thereof; the 1-alkylpyridinium halide thereof; the 1-(phenylalkyl)pyridinium halide thereof; the tautomer thereof; and the pharmacologically acceptable acid-addition salts thereof.

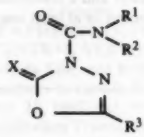
4,499,098

INSECTICIDAL N-CARBAMOYL-OXADIAZOLIDIN-5-ONES AND THIONES

Laroy H. Edwards, Napa, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 15, 1983, Ser. No. 514,073
Int. Cl.[3] A01N *43/82;* C07D *273/02*
U.S. Cl. 514—364 19 Claims

1. A compound of the formula:



wherein X is oxygen or sulfur, R^1 and R^2 are independently lower alkyl having from 1 to 4 carbon atoms; and R^3 is lower cycloalkyl having from 3 to 6 carbon atoms substituted with methyl or ethyl, lower alkoxyalkyl having up to a total of 8 carbon atoms or lower alkylthioalkyl having up to a total of 8 carbon atoms.

8. A method for killing insects which comprises contacting said insects or their habitat with an insecticidally effective amount of the compound of the formula defined in claim 1.

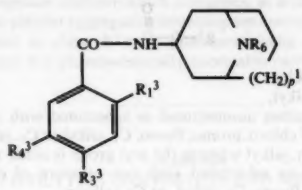
4,499,099

NORTROPANE AND GRANATANE TYPE COMPOUNDS USEFUL IN TREATING PSYCHOSIS

Eric A. Watts, Harlow, England, assignor to Beecham Group p.l.c., England

Filed Jun. 9, 1982, Ser. No. 386,723
Claims priority, application United Kingdom, Jun. 17, 1981, 8118603; Jun. 17, 1981, 8118604; Jun. 29, 1981, 8119997; Jun. 29, 1981, 8119998; Dec. 15, 1981, 8137821
Int. Cl.[3] A61K *31/46;* C07D *451/02, 451/14*
U.S. Cl. 514—299 10 Claims

1. A compound of formula (VII) or a pharmaceutically acceptable salt and/or solvate and/or N-oxide thereof:



(VII)

wherein:

R_1^3 is C_{1-6} alkoxy;

R_3^3 is amino or C_{1-7} acylamino;

R_4^3 is C_{1-6} alkylthio;

p^1 is 0 or 1;

and R_6 is C_{1-7} alkyl or a group $-(CH_2)_sR_7$ where s is 0 to 2 and R_7 is a C_{3-8} cycloalkyl group, or a group $-(CH_2)_tR_8$ where t is 1 or 2 and R_8 is C_{2-5} alkenyl or a phenyl group optionally substituted by one or two substituents selected from C_{1-6} alkyl, C_{1-4} alkoxy, trifluoromethyl and halogen.

10. A method of treatment of pychosis in mammals, including humans, which comprises administering to the sufferer an effective amount of a compound according to claim 1 or a pharmaceutically acceptable salt thereof.

4,499,100

BENZODIOXANYL-HYDROXYETHYLENEAMINO-PIPERIDINYL ACETANILIDES, KETONES, ESTERS AND CARBAMATES WHICH EFFECT IMMUNITY AND CALCIUM ENTRY AND β-BLOCKADE

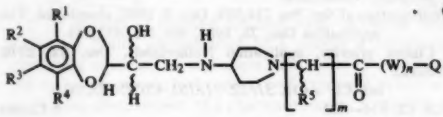
Arthur F. Kluge, Los Altos, and Robin D. Clark, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 18, 1983, Ser. No. 495,902

Int. Cl.³ A61K *31/445;* **C07D** *405/12*

U.S. Cl. 514—321 **49 Claims**

1. A compound of the formula:



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein:

R^1, R^2, R^3 and R^4 are each independently hydrogen, lower alkyl, lower alkoxy, trifluoromethyl, halo, lower alkylthio, lower alkyl sulfinyl or lower alkyl sulfonyl;

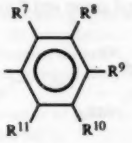
R^5 is hydrogen or lower alkyl;

m is 0 or 1;

W is alkylene, —CH=CH—, —O—, or —N(R^6)—, where R^6 is lower alkyl or hydrogen;

n is 0 or 1; and

Q is lower alkyl, cycloalkyl of 3–8 carbon atoms or optionally substituted phenyl of the formula



wherein each of R^7, R^8, R^9, R^{10} and R^{11} is independently chosen from hydrogen, lower alkyl, lower alkoxy, trifluoromethyl, halo, lower alkylthio, lower alkyl sulfinyl or lower alkyl sulfonyl, aminosulfonyl or hydroxyl or R^8 and R^9 together form a $-OCH_2O-$ linkage.

40. A method for treating a cardiovascular disease in a mammal which method comprises administering to a subject in need of such treatment a therapeutically effective amount of the compound of claim 1.

4,499,101

PHARMACOLOGICALLY ACTIVE ISOXAZOLE AND TRIAZOLE COMPOUNDS

Graham J. Durant, and Charon R. Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 215,293, Dec. 11, 1980, Pat. No. 4,388,319, which is a division of Ser. No. 106,080, Dec. 20, 1979, Pat. No. 4,271,169, which is a division of Ser. No. 5,052, Jan. 22, 1979, Pat. No. 4,215,125, which is a division of Ser. No. 770,538, Feb. 22, 1979, Pat. No. 4,152,443, which is a division of Ser. No. 640,525, Dec. 15, 1975, Pat. No. 4,025,527, which is a continuation-in-part of Ser. No. 481,716, Jun. 21, 1974, abandoned. This application Feb. 4, 1983, Ser. No. 463,768

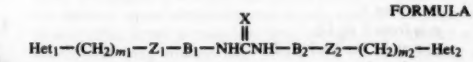
Claims priority, application United Kingdom, Jul. 13, 1973, 33428/73

Int. Cl.³ A61K *31/41, 31/42;* **C07D** *249/08, 261/08*

U.S. Cl. 514—374 **11 Claims**

1. A compound of the formula:

FORMULA I



wherein one of Het_1 and Het_2 is isoxazolyl or triazolyl and the other is imidazolyl, oxazolyl, isoxazolyl or triazolyl, said Het_1 and Het_2 being attached at a carbon atom and optionally substituted by lower alkyl, hydroxyl, halogen or amino; Z_1 and Z_2 are sulphur or a methylene group; B_1 is $(CH_2)_{n1}$ and B_2 is $(CH_2)_{n2}$; m_1 and m_2 are 0, 1 or 2 and n_1 and n_2 are 2 or 3 , provided that the sum of m_1 and n_1 and the sum of m_2 and n_2 are from 2 to 4; and X is sulphur, oxygen or NY wherein Y is hydrogen, cyano, $CONH_2$ or SO_2R_1 wherein R_1 is lower alkyl or phenyl, provided that when X is NH, at least one of Z_1 or Z_2 is sulphur, and that when X is NH the sum of m_1 and n_1 is 3 or 4 if Het_1 is imidazolyl and the sum of m_2 and n_2 is 3 or 4 if Het_2 is imidazolyl, or a pharmaceutically acceptable acid addition salt thereof.

11. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in an effective amount to inhibit said receptors a compound of claim 1.

4,499,102

THIAZOLIDINE AND PYRROLIDINE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Masayuki Oya, Ibaraki, and Tadashi Iso, Sakai, both of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

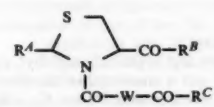
Continuation-in-part of Ser. No. 165,561, Jul. 3, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,296

Claims priority, application Japan, Dec. 13, 1979, 54-161977; Canada, Dec. 12, 1980, 366732; European Pat. Off., Dec. 12, 1980, 80107869.2; Japan, Dec. 24, 1980, 55-183379

Int. Cl.³ A61K *31/40, 31/425;* **C07D** *207/16, 277/06*

U.S. Cl. 514—365 **17 Claims**

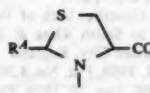
1. A compound of formula (I)



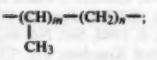
(I)

wherein

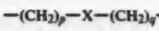
R^A is selected from the group consisting of
(a) phenyl and naphthyl;
(b) phenyl substituted by at least one substituent selected from the group consisting of lower alkyl, hydroxy, lower alkoxy, halogenolower alkoxy, acetoxy, halogen, nitro, cyano, carboxy, sulfamoyl and lower alkylsulfinyl;
R^B is hydroxy or lower alkoxy;
R^C is hydroxy, lower alkoxy or



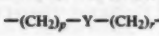
W is selected from the group consisting of



(a)



(b)



(c)

wherein
m is 0 or 1;
n is from 1 to 12;
p, r and t are each 1, 2 or 3;
q is 2 or 3;
X is O, SO or SO_2; and
Y is O, S, SO or SO_2,
and salts thereof, said lower alkyl, lower alkanoyl and lower alkoxy having 1 to 6 carbon atoms.

14. A composition comprising an amount of the compound of claim **1** sufficient to reduce blood pressure and a pharmaceutically acceptable excipient.

16. A composition comprising an amount of the compound of claim **1** sufficient to prevent or relieve diabetes mellitus associated complications consisting of cataracts, neuropathy, nephropathy and retinopathy in a diabetic mammal, and a pharmaceutically acceptable excipient.

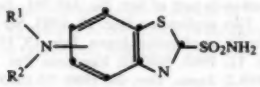
4,499,103

BENZOTHIAZOLE-2-SULFONAMIDE DERIVATIVES FOR THE TOPICAL TREATMENT OF ELEVATED INTRAOCULAR PRESSURE

S. Jane de Solms, Norristown, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 17, 1983, Ser. No. 476,002
Int. Cl.[3] **C07D** *277/80;* **A61K** *31/425*
U.S. Cl. 514—365 **16 Claims**

1. A compound of structural formula:



or an ophthalmologically acceptable salt thereof, wherein: R^1 and R^2 are independently:
(1) hydrogen,
(2) C_{1-12}alkyl,
(3) C_{3-6}cycloalkyl,
(4) C_{3-6}cycloalkyl-C_{1-3}alkyl,
(5) aryl-C_{1-3}alkyl, wherein aryl is phenyl, naphthyl, pyridinyl, furanyl or thienyl, and is unsubstituted or substituted with one or more of chloro, bromo, fluoro, C_{1-3}alkyl or C_{1-3}alkoxy,
(6)

wherein R^3 is
(a) C_{1-18}alkyl,
(b) aryl, either unsubstituted or substituted with one or more of chloro, bromo, fluoro, C_{1-3}alkyl or C_{1-3}alkoxy,
(c) aryl-C_{1-3}alkyl wherein the aryl group is either unsubstituted or substituted with one or more of chloro, bromo, fluoro, C_{1-3}alkyl, or C_{1-3}alkoxy,
(d) -amino-C_{1-18}alkyl; or
(7) R^1 and R^2, if loweralkyl, are joined together directly or through a heteroatom selected from O or N, to form a heterocycle with the nitrogen to which they are attached selected from pyrrolidine, piperidine, morpholine and piperazine.

4,499,104

IMIDAZOLE COMPOUND, THE PROCESS FOR ITS PREPARATION, AND THERAPEUTICALLY ACTIVE COMPOSITIONS CONTAINING SAME

Juan Scalesciani, Buenos Aires, Argentina, assignor to Farmatis S.r.l., Milan, Italy

Filed May 31, 1977, Ser. No. 796,532
Claims priority, application France, May 13, 1976, 76 14381
Int. Cl.[3] **A61K** *31/415*
U.S. Cl. 514—396 **3 Claims**

1. A method of effecting antiinflamatory, analgesic and antipyretic activity which comprises administering to the host an effective amount of an active ingredient selected from 4-(p-chlorophenyl)-5-methylimidazole or a non-toxic pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

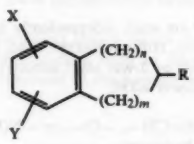
4,499,105

CARBOXYIMIDAMIDE DERIVATIVES

Harm J. Panneman, Oss, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

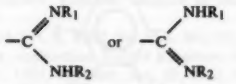
Continuation of Ser. No. 214,889, Dec. 9, 1980, abandoned. This application Dec. 28, 1982, Ser. No. 452,194
Claims priority, application Netherlands, Dec. 12, 1979, 7908922
Int. Cl.[3] **A61K** *31/22, 31/155;* **C07C** *123/00*
U.S. Cl. 514—631 **6 Claims**

1. Carboximidamide derivatives of the general formula:



I

in which n and m represent the value 1 or 2, X and Y hydrogen, alkyl (1–4 C), alkoxy (1–4 C), hydroxy, halogen, hydroxymethyl, trifluoromethyl, acyl (1–4 C), acyloxy (1–4 C) or the group NR_xR_y, in which R_x and R_y represent hydrogen, alkyl (1–4 C) or a sulphonyl group and R represents the group:



in which R_1 and R_2 represent hydrogen, alkyl (1–4 C), hydroxy, alkoxy (1–4 C), phenylalkoxy (7–10 C), acyloxy, amino or mono- or dialkyl (1–4 C)-amino, or a pharmaceutically acceptable salt thereof.

6. A pharmaceutical composition for use as a blood platelet aggregation inhibitor which comprises, as active ingredient, a blood platelet aggregation inhibiting amount of a compound as defined in claim 1, or a pharmaceutically acceptable salt thereof, in a pharmaceutically acceptable carrier.

4,499,106

LIPOLYTIC COMPOSITION AND METHOD OF TREATING OBESITY

Werner Traunecker, Münster-Sarmsheim; Wilhelm Frölke, Ingelheim am Rhein; Heinrich Kreuzer, Gau-Algesheim, and Hans P. Köllmer, Wackernheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,457

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 3220598

Int. Cl.³ A61K *31/16*

U.S. Cl. 514—603 **1 Claim**

1. The method of combatting obesity in a warm-blooded animel in need thereof, which comprises orally administering to said animal an effective lipolytic amount of 1-(4-hydroxy-3-dimethylamino-sulfanamidophenyl)-1-hydroxy-2-(1-phenoxy-isopropylamino)ethane or a pharmaceutically acceptable acid addition salt thereof.

4,499,107

METHOD FOR TREATING INFECTED RENAL CALCULOSIS

Mario Bergamaschi, Monza, and Carlo Alfieri, Milan, both of Italy, assignors to Dr. L°. Zambeletti, S.p.A., Milan, Italy

Filed Oct. 19, 1982, Ser. No. 435,291

Claims priority, application Italy, Nov. 5, 1981, 24897 A/81

Int. Cl.³ A61K *31/165*

U.S. Cl. 514—575 **3 Claims**

1. A method of treating infected renal calculosis which comprises orally administering to a patient a composition containing as the active ingredient from about 25 mg to about 500 mg of proprionic hydroxamic acid expressed as free acid, or an equivalent amount of a pharmaceutically acceptable salt thereof, in admixture with a pharmaceutically acceptable carrier.

4,499,108

STABLE PLEASANT-TASTING ALBUTEROL SULFATE PHARMACEUTICAL FORMULATIONS

Joel A. Sequeira, New York, N.Y., and Michael A. Zupon, Madison, N.J., assignors to Schering Corporation, Madison, N.J.

Filed Jun. 8, 1983, Ser. No. 502,427

Int. Cl.³ A61K *31/135*

U.S. Cl. 514—653 **6 Claims**

1. A stable, pleasant-tasting pharmaceutical formulation comprising per ml of the formulation:

(a) 0.2 to 6.0 mg albuterol sulfate,

(b) sufficient buffer to control the pH of the formulation to 2 to 5,

(c) sufficient preservative to prevent microbial growth,

(d) 0.1 to 2.0 mg saccharin,

(e) sufficient viscosity imparting agent to cause the viscosity of the formulation to be higher than that of water at room temperature, and

(f) water q.s. for 1 ml.

4,499,109

PROCESS FOR THE PRODUCTION OF CHEESE CURD

Tage Christiansen, Nibe; Werner Imhof, Vadum; Poul F. Jensen, Aalborg; Jens B. Kjaer, Hjallerup; Bjarne Kristiansen, Nibe; Kjeld Kristensen, Vodskov, and Bent Pedersen, Hjallerup, all of Denmark, assignors to Orum Sogns Mejeri APS, Hjallerup, Denmark

Filed May 17, 1982, Ser. No. 379,092

Claims priority, application Sweden, May 15, 1981, 8103062

Int. Cl.³ A23C *9/12, 19/00*

U.S. Cl. 426—36 **11 Claims**

1. A process for the production of cheese curd which comprises subjecting a liquid milk product to renneting by adding thereto and admixing therewith a coagulating agent, introducing the resulting mixture into the inlet end of a long coagulator tube while said mixture is at a coagulating temperature in the range of about 25°–50° C., passing said mixture under substantially adiabatic conditions through the coagulator tube, discharging said mixture as plug-shaped coagulated cheese curd from an outlet end of said tube, the renneting conditions being selected so that the renneting time remaining after said introduction of the mixture into said inlet end is at least three minutes, said mixture being fed intermittently into said inlet end during feeding periods alternating with intermediate stand still periods, the length of a feeding period being selected so that no substantial coagulation occurs in the mixture from its introduction into the coagulator tube to its first stand still period in said tube, the length of a stand still period being sufficient so that the mixture, upon being subjected to only one stand still period in said tube, forms a coagulum firm enough to be moved as a continuous plug toward said outlet end by said feeding of mixture into said inlet end during a successive feeding period, the speed of feeding mixture into said tube and the length of said tube being adjusted so that the residence time in said tube for the cheese curd discharged from said outlet end comprises at least one feeding period and one stand still period.

4,499,110

PHOSPHOROUS-NITROFEROUS SOLID FODDER COMPOSITION AND PROCESS FOR ITS PRODUCTION

Béla Tomkó, 27, Páskomliget ut, 1156 Budapest; Géza Márai, 1/A, Nyisztor tér, 2100 Gödöllo, and Béla Karácsonyi, 18, Práter utca, 1082 Budapest, all of Hungary

Continuation of Ser. No. 435,127, Oct. 18, 1982, abandoned, which is a continuation of Ser. No. 137,506, Apr. 4, 1980, abandoned. This application Dec. 12, 1983, Ser. No. 560,270

Claims priority, application Hungary, Apr. 6, 1979, TO 1099

Int. Cl.³ A23K *1/22*

U.S. Cl. 426—69 **2 Claims**

1. Process for the production of a phosphorous-nitrogen containing solid fodder composition, consisting essentially of: adding to one part by weight of the urea, 0.15–0.25 part by weight of diluted or conc. H_3PO_4 at a temperature above 132.7° C. to form a melt; dispersing in the melt 0.1–1.0 part by weight of a uniform dispersion of starch; extruding or granulating the melt hot or cold, and adding other fodder components to the melt, whereby release of phosphoric acid and urea in living organisms is controlled.

4,499,111

PROCESS FOR CONTINUOUSLY DETERMINING THE MOISTURE CONTENT OF SPOILABLE GRAIN PRODUCTS

Hans Oetiker, St. Gallen, and Emanuel Kummer, Gossau, both of Switzerland, assignors to Gebruder Buhler AG, Switzerland

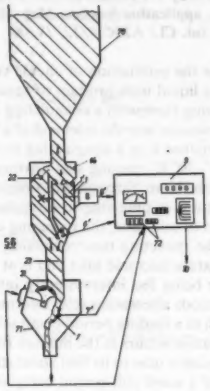
Continuation-in-part of Ser. No. 355,596, Feb. 17, 1982,. This application Jun. 25, 1982, Ser. No. 392,137

Int. Cl.³ G01N *5/02, 33/02;* G01R *27/26*

U.S. Cl. 426—231 **15 Claims**

1. A process for continuously determining the moisture content of a spoilable grain product moving along a processing line as a product stream and, at least in part, passing down-

wardly through a measuring section, said process comprising the steps of continuously diverting a portion of said product stream, reducing the flow rate of said portion relative to the remainder of said product stream so that said portion corresponds to a pourable average of said product stream, electrically measuring the moisture content of said pourable average



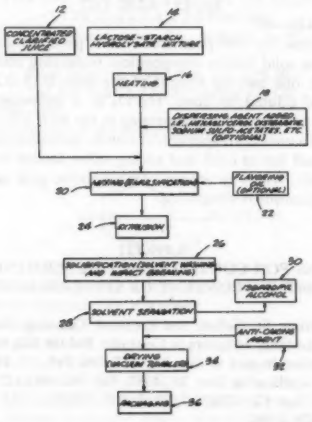
as it passes through the measuring section, passing said remainder of said product stream downwardly through a passageway forming a bypass section in parallel with said measuring section, and controlling the flow of product in said bypass section to maintain a constant product level therein, whereby a constant quantity of product accumulation in said measuring section is obtained.

4,499,112

PROCESS FOR FORMING SOLID JUICE COMPOSITION AND PRODUCT OF THE PROCESS

Dennis H. Miller, Rancho Cucamonga, and Jerry R. Mutka, Corona, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Mar. 21, 1983, Ser. No. 477,234
Int. Cl.³ A23L *2/26, 2/10*
U.S. Cl. 426—276 **27 Claims**



1. A process for preparing a relatively stable, non-hygroscopic solid composition having an amorphous quality, said composition being derived from an aqueous fruit juice, comprising the steps of:

clarifying and concentrating a selected aqueous juice to a minimum concentration of about 85° BRIX,

heating to about its boiling point an aqueous mixture of a sugar and a starch hydrolysate,

blending said aqueous mixture and said aqueous juice in relative amounts selected for forming a homogeneous melt,

extruding said melt into a solvent at a temperature effective to form solidified extruded material,

forming said extruded material into particles, and

drying said particles in combination with a selected anti-caking agent to produce a relatively stable and non-hygroscopic solid composition in particulate form.

4,499,113

PROCESS FOR PREPARING SNACK PRODUCTS WITH EXPANDED COATING

Keizo Mochizuki; Yukio Kuwada, both of Kanagawa, and Yoshihiko Mizoguchi, Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Aug. 26, 1982, Ser. No. 411,785
Claims priority, application Japan, Aug. 26, 1981, 56-133647
Int. Cl.³ A23G *3/00*
U.S. Cl. 426—291 **8 Claims**

1. A process for producing an edible snack product with an expanded coating, comprising the steps of:

providing a core material selected from the group consisting of nuts, beans, an expanded edible starchy material coated with an edible fatty confectionary material and a shaped fatty confectionary material;

providing a first flour mixture comprised of 60:40 to 30:70 parts by weight of a starchy flour capable of providing a small degree of expansion and good savor upon frying and a pregelatinized starchy flour capable of providing a high degree of expansion upon frying;

providing a first aqueous sugar solution having a refractive Brix value of between 30 and 40;

coating said core material with a first coating by alternately applying the first flour mixture and the first aqueous sugar solution to form a uniform coating on the core material;

providing a second flour mixture comprised of a starchy flour capable of providing a small degree of expansion and good savor upon frying and an equal or less amount of weight of a pregelatinized starchy flour capable of providing a high degree of expansion upon frying;

providing a second aqueous sugar solution having a refractive Brix value of between 50 and 60;

coating the first coating with a second coating which is less expandable than the first coating during frying by alternately applying the second flour mixture and the second aqueous sugar solution in order to form a uniform second coating;

controlling the thickness of the first coating and the second coating so that the weight ratio of the first coating to the second coating is in the range of from 50:50 to 60:40; and

frying the core material with the first and second coatings thereon.

4,499,114

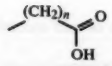
FLAVORING SOME TROPICAL FLAVORED FOODSTUFFS WITH MIXTURE OF C_4–C_{10} -N-ALKANOIC ACID AND ETHYL ESTER OF 2-HYDROXY-4-METHYL PENTANOIC ACID

Domenick Luccarelli, Jr., Neptune; Braja D. Mookherjee, Holmdel; Richard A. Wilson, Westfield; Michael J. Zampino, North Bergen, and David R. Bowen, Somerset, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 13, 1984, Ser. No. 620,164
Int. Cl.³ A23L *1/235*
U.S. Cl. 426—534 8 Claims

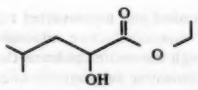
1. A process for augmenting or enhancing the aroma or taste of a tropical flavored foodstuff selected from the group consisting of guava flavored foodstuff, mango flavored foodstuff and papaya flavored foodstuff comprising the step of adding to said tropical flavored foodstuff from 0.5 parts per million up to about 500 parts per million based on the total foodstuff of a mixture of:

(a) at least one carboxylic acid defined according to the structure:



and

(b) the synthetically produced substantially pure ethyl ester of 2-hydroxy-4-methyl pentanoic acid having the structure



wherein the weight ratio of ethyl ester of 2-hydroxy-4-methyl pentanoic acid: carboxylic acid is from about 8:1 to about 2:1.

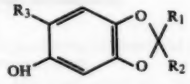
4,499,115

ANTIOXIDANT BENZODIOXOLE COMPOUND

Thi H. Minh, Kingsford; Edward R. Cole, Turramurra, and George Crank, Sdyney, all of Australia, assignors to Unisearch Limited, Kensington, Australia

Continuation of Ser. No. 222,986, Jan. 7, 1981, abandoned. This application Dec. 30, 1982, Ser. No. 454,883
Claims priority, application Australia, Jan. 7, 1980, PE1920
Int. Cl.³ A23D *5/04;* C07D *317/06*
U.S. Cl. 426—546 9 Claims

1. A method of retarding oxidation of foodstuffs containing edible oils or fats, comprising, mixing with a foodstuff an antioxidation effective amount of a benzodioxole compound having the structure



wherein

R_1 is a hydrogen atom or an alkyl group or an aryl group;

R_2 is an alkyl group or an aryl group;

or

R_1 and R_2 together form a cycloalkyl group; and

R_3 is a hydrogen atom or an hydroxyl group.

4,499,116

IMITATION CHEESE PRODUCTS CONTAINING MODIFIED STARCH AS PARTIAL CASEINATE REPLACEMENT AND METHOD OF PREPARATION

Gary A. Zwiercan, Knutsford, England; Norman L. Lacourse, Plainsboro, and Julianne M. Lenchin, Cranbury, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 455,389, Jan. 3, 1983, abandoned. This application Dec. 2, 1983, Ser. No. 556,479
Int. Cl.³ A23C *20/00*
U.S. Cl. 426—582 20 Claims

1. An imitation cheese product containing at least one edible caseinate, wherein the improvement comprises the replacement of part of the caseinate, in an amount up to about 80% by weight, with an edible modified starch, the starch-caseinate cheese product being functionally equivalent to the caseinate cheese product; the starch being a pregelatinized converted starch having a water fluidity (WF) of about 5–90 and an amylose content of about 15% to below about 40% by weight; a derivative thereof prepared by treatment of the starch with up to about 10% propylene oxide, up to about 2% succinic anhydride, up to about 3% octenylsuccinic anhydride, a sufficient amount of acetic anhydride to provide a maximum of about 2.5% bound acetyl, or a sufficient amount of sodium or potassium orthophosphate, sodium or potassium tripolyphosphate, or mixture thereof to provide a maximum of about 0.4% bound phosphate; or a moderately crosslinked product thereof prepared by treatment of the starch with phosphorus oxychloride, epichlorohydrin, sodium trimetaphosphate, or adipic-acetic anhydride; or a derivatized moderately crosslinked starch; the converted starch being a fluidity starch prepared by acid- or enzyme-conversion of the starch or an oxidized starch prepared by treatment of the starch with up to about 2% active chlorine; the treatment percentages being by weight based on the starch.

4,499,117

METHOD OF PREPARING NATURAL BEVERAGES HAVING A LOW ALCOHOL LEVEL, USING ULTRAFILTRATION TECHNIQUES

Marc Bonneau, 42, rue Bélissen, F-69005 Lyon, France

PCT No. PCT/FR82/00005, § 371 Date Sep. 13, 1982, § 102(e) Date Sep. 13, 1982, PCT Pub. No. WO82/02405, PCT Pub. Date Jul. 22, 1982
PCT Filed Jan. 13, 1982, Ser. No. 420,251
Claims priority, application France, Jan. 13, 1981, 81 00915
Int. Cl.³ C12G *3/08, 1/00;* B01D *13/00*
U.S. Cl. 426—592 5 Claims

1. A process for the preparation of a natural beverage having a low alcohol level, which comprises the steps of:

(a) ultrafiltering a natural alcoholic liquid under low pressure through a semi-permeable ultrafilter whose molecular weight separation threshold is about 10,000 to form as a retentate R_1, containing a mixture of organic molecules of a molecular weight greater than or equal to 10,000, and an ultrafiltrate F_1, containing a mixture of organic molecules of a molecular weight less than 10,000;

(b) subjecting the ultrafiltrate F_1 formed during step (a), to reverse osmosis under high pressure through a semi-permeable membrane whose molecular weight separation threshold is about 250 to form as a retentate R_2, containing a mixture of organic molecules of a molecular weight between 10,000 and 250 and an ultrafiltrate F_2, containing a mixture of organic molecules of a molecular weight less than 250;

(c) evaporating by vacuum distillation under a low temperature the ultrafiltrate F_2 prepared during step (b) to yield a retentate R_3, which contains a mixture of molecules of molecular weight less than 250, and an evaporate F_3, which is alcohol; and

(d) forming the natural beverage of low alcohol content by mixing in suitable proportions corresponding to the levels

of the starting product in the elements supporting the organoleptic, biological and physical-chemical properties, the retentates R_1, R_2 and R_3, or the retentates R_1 and R_3 or the retentates R_2 and R_3.

4,499,118

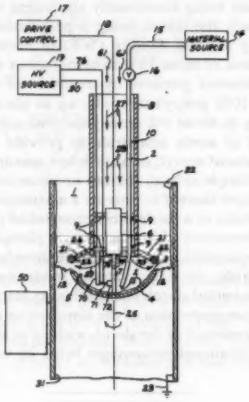
METHOD FOR COATING WITH AN ATOMIZABLE MATERIAL

Peter W. Dietz, Delanson, and Ralph T. Wood, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 345,508, Feb. 3, 1982, Pat. No. 4,440,350. This application Nov. 21, 1983, Ser. No. 553,657

Int. Cl.³ B05B *5/08, 13/06*

U.S. Cl. 427—28 **14 Claims**



1. A method for applying a coating of atomizable material to the inside surface of a glass tube comprising:

(a) positioning a non-rotatable hollow tubular support means for inserting into said tube, said support means housing a drive means having a rotatable member affixed thereto adjacent to one end of said support means,;

(b) delivering said material to a surface of said member adapted to receive said material via a path through said support means,;

(c) concurrently rotating said member at a predetermined angular velocity in order to cause said material to be thrust from said surface of said member and translating said support means relative to said tube along the axis of said tube, whereby droplets of material are formed and at least a portion of said droplets impact said inside surface of said tube parallel to the axis thereof; and

(d) performing (b) and (c) concurrently.

4,499,119

METHOD OF MANUFACTURING SUPER-CONDUCTIVE TUNNEL JUNCTION DEVICES WITH PRECISE JUNCTION AREA CONTROL

Lawrence N. Smith, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 6, 1983, Ser. No. 511,354

Int. Cl.³ H01L *39/24, 39/22*

U.S. Cl. 427—63 **36 Claims**

1. A method of defining an area on a layer of an integrated circuit comprising the steps of

masking a first region of said layer with a said first narrow-line mask,

subtractively rendering ineffective unmasked regions of said layer,

removing said first mask,

applying a second narrow-line mask to said layer intersecting said first region at an angle with respect thereto, and

subtractively rendering ineffective unmasked and effective regions of said layer,

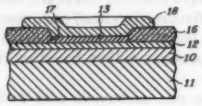
so as to define said area on said layer by the intersection of said first and second masks.

3. A method of defining the area of a superconductive tunnel junction comprising the steps of

forming a first layer of superconductive material on a substrate,

forming a barrier layer of barrier material on said first layer,

forming a second layer of superconductive material on said barrier layer,



masking a first region of said second layer with a first narrow-line mask,

converting unmasked regions of said second layer of superconductive material to an insulating material through the entire thickness thereof,

removing said first mask,

applying a second narrow-line mask to said second layer intersecting said first region at an angle with respect thereto, and

converting unmasked and unconverted regions of said second layer of superconductive material to an insulating material through the entire thickness thereof,

said first layer remaining substantially unconverted to insulating material during said conversion steps.

4,499,120

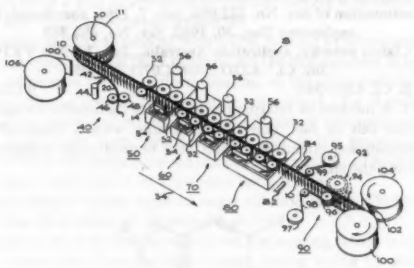
METHOD FOR SOLDER TINNING OF COMPONENT LEADS

George C. Marshall, Jr., Claremont, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Division of Ser. No. 427,095, Sep. 29, 1982, Pat. No. 4,491,084. This application Oct. 6, 1983, Ser. No. 539,690

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—123 **15 Claims**



1. A method of solder tinning electronic component leads comprising the steps of:

providing a plurality of electronic components in sequence from a storage member, the two component leads of each component being secured to corresponding adjacent component leads by first and second retaining means as stored;

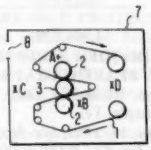
advancing said component leads through a sequence of processing stages whereby said leads are solder tinned;
removing said first retaining means from leads at a first processing stage which precedes the other processing stages in said sequence;
cleaning said component leads at a second processing stage;
applying flux to the cleaned component leads at a third processing stage; and
applying solder to the cleaned component leads at a fourth processing stage.

4,499,121

METHOD OF PREPARING A MAGNETIC RECORDING MEDIUM WITH A CALENDERING TREATMENT

Nobutaka Yamaguchi; Masaaki Fujiyama; Sugihiko Tada; Eiichi Tadokoro; Katsumi Ryoke; Masahiro Utsumi, and Masami Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 4, 1983, Ser. No. 491,485
Claims priority, application Japan, May 4, 1982, 57-75634
Int. Cl.³ H01F *10/02*
U.S. Cl. 427—130 **6 Claims**



1. A method for producing a magnetic recording medium comprising the steps of:
(A) providing a ferromagnetic coating layer on a non-magnetic support base to provide a coated base;
(B) subjecting the coated base to an atmosphere having an RH of not less than 60% prior to step (C); and
(C) subjecting the coated base to calendaring treatment.

4,499,122

PROCESS FOR FINISHING SURFACES ACHIEVING IMPROVED MAGNETIC DISK PERFORMANCE

James Economy, San Jose, and Anagnostis E. Zachariades, Hillsborough, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1983, Ser. No. 528,318
Int. Cl.³ H01F *10/00*
U.S. Cl. 427—130 **7 Claims**

1. A method for producing an improved magnetic recording disk comprising the steps of:
applying a curable liquid magnetic coating material to a substrate, said coating material containing magnetic particles and load bearing particles, at least some of said load bearing particles extending above the surface of said coating material,
placing said coated substrate between a pair of rollers, said rollers having an ultra-smooth surface finish, the hardness of the surfaces of said rollers exceeding the hardness of the surface of said coating material, said magnetic particles and said substrate,
rotating both said rollers at the same speed to cause the substrate to be moved at said same speed through the rollers without longitudinal deformation, and
applying through said rollers a force to said coated substrate which exceeds the elastic limit of said coating material, the application of said force pushing said protruding load bearing particles into said coating material and substrate to increase its durability;
the application of said force also improving the surface finish of said coating material and also permanently compressing said coating material to increase the concentration of said magnetic particles in said coating material.

4,499,123

PROCESS FOR COATING ALUMINUM WITH ZINC

Masamichi Suzuki, Mishima; Atsushi Sugihara, Shimizu; Tadaaki Sano, Fuji, and Toshihiro Suzuki, Numazu, all of Japan, assignors to Alcan International Limited, Montreal, Canada

Filed May 3, 1983, Ser. No. 491,022
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—282 **17 Claims**

1. A process for applying a coating of zinc to a surface of an aluminum article comprising, in combination, the steps of
(a) exposing the surface to an aqueous bath, containing an alkali metal hydroxide and a concentration of zinc oxide between about 50 and about 110 grams per liter, at a temperature between about 20° and about 40° C. for depositing metallic zinc on said surface; and
(b) exposing the surface, bearing the zinc deposited thereon in step (a), to an aqueous bath, containing an alkali metal hydroxide and a concentration of zinc oxide between about 30 and about 70 grams per liter, at a temperature between about 30° and about 60° C. for depositing further metallic zinc on said surface, the last-mentioned zinc oxide concentration and the last-mentioned temperature being mutually selected to provide a stronger deposition condition in this step (b) than in step (a).

4,499,124

PROCESS OF COATING CONSISTING OF A MIXTURE OF VINYL CHLORIDE POLYMER AND POLYURETHANE WITH TERTIARY AMINE AND/OR AMMONIUM GROUPS

Christian Pusineri, Serezin du Rhone, and Jean Goletto, Ecully, both of France, assignors to Hospal-Sodip, S.A., Meyzieu, France

Division of Ser. No. 566,331, Dec. 28, 1983, , which is a division of Ser. No. 489,707, Apr. 29, 1983, Pat. No. 4,333,072, which is a division of Ser. No. 417,323, Sep. 13, 1982, Pat. No. 4,394,462, which is a division of Ser. No. 103,894, Dec. 17, 1979, Pat. No. 4,408,026. This application Jun. 15, 1984, Ser. No. 621,221
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—385.5 **7 Claims**

1. Process for the preparation of organic polymer compositions, which can be used, in particular for producing tubes and catheters, having good compatibility with biological materials, characterized in that a support is coated with a solution of a composition that consists of a mixture of vinyl chloride polymer and of polyether-urethane with tertiary amine and/or ammonium groups with the proportion of the polyether-urethane being from 1 to 99 percent by weight, relative to the total mixture, and in that this coated solution is evaporated.

4,499,125

CONTINUOUSLY PRODUCED MELT REACTED MELAMINE-FORMALDEHYDE RESINS

Elmer P. Blasing; Ronald J. Keeling, and Jin-Young K. Roe, all of Cincinnati, Ohio, assignors to Formica Corporation, Wayne, N.J.

Division of Ser. No. 466,172, Feb. 14, 1983, Pat. No. 4,458,062. This application Jan. 13, 1984, Ser. No. 570,569

Int. Cl.³ B05D *3/02*

U.S. Cl. 428—503 **6 Claims**

1. A continuous method for the one-shot preparation of a melamine-formaldehyde resin which comprises:

charging crystalline melamine and solid formaldehyde, in the absence of solvent, into a single pass reactor at a temperature ranging from about 120° C. to about 180° C. for from about 30 seconds to about 5 minutes, recovering the resultant resin as a molten liquid, coating said molten resin onto a reinforcing substrate while at approximately the temperature of reaction and cooling the resultant coated substrate.

4,499,126

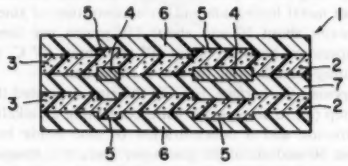
PLASTIC RELIEF CARD HAVING METALLIC LUSTER

Norimoto Suzuki, Tokyo, and Shunji Inoue, Yokohama, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed May 11, 1983, Ser. No. 493,518

Int. Cl.³ G09F *3/02*; **G03C** *11/08*

U.S. Cl. 428—13 **13 Claims**



1. A plastic card having metallic luster relief appearances comprising at least one metallic luster plastic sheet containing a metallic-luster pigment and having a relief pattern of surface concavities and convexities formed on the surface thereof and transparent plastic sheets respectively laminated onto the outer surfaces of the metallic-luster plastic sheet

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4,499,127

PICTURE-BACKING FOIL WITH DEPRESSIONS AND COLORING MATERIALS THEREIN

William A. Jones, P.O. Box 189, Everett, Wash. 98201

Filed Jul. 20, 1981, Ser. No. 284,939

Int. Cl.³ B44D *2/00*

U.S. Cl. 428—14 **14 Claims**

1. A picture comprising,

a backing member,

a foil sheet, continuous, imperforate and impervious, and having regular and uniform surfaces one surface being secured to the backing member in position thereon with its other surface forming a front surface presented to view,

the backing member being semi-rigid, and thereby self-sustaining in shape, and the backing member and foil sheet together constituting a semi-rigid panel,

the backing member and foil sheet being pre-selected in size to determine the size of the picture to be made,

the foil sheet being capable of having depressions formed therein, and the backing member being capable of having depressions formed therein in response to depressions being formed in the front surface of the foil sheet, and both the foil sheet and backing member having depressions therein, resulting in corresponding depressions in the panel, and

substances in the depressions contrasting in appearance with the foil sheet,

the depressions and thereby the respective substances therein being selectively and individually so dimensioned and proportioned and positioned relative to each other as to form a predetermined picture independently of and separate from that portion of the foil sheet that is devoid of depressions and substances and that constitutes a portion of said front surface.

4,499,128

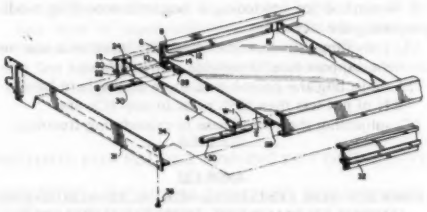
ADJUSTABLE DIVIDER STRIP MOUNTING FOR PLASTIC TRAYS

Myron A. Strausheim, Richmond, Ind., assignor to American Desk Mfg. Co., Temple, Tex.

Filed Sep. 14, 1983, Ser. No. 532,224

Int. Cl.³ B32B *1/00*

U.S. Cl. 428—35 **4 Claims**



1. A divider strip and mounting for a tray having front and rear sides, said tray having an elongate forwardly open substantially "C"-shape channel disposed along the rear side thereof, the "C"-shape of said channel being formed by generally oppositely facing arm portions, said mounting comprising a clip, said clip having an aperture therethrough, said clip slidingly engaging in the channel for lengthwise sliding movement therein and being normally blocked against forward disengagement therefrom by the arm portions of the channel and means for connecting an end portion of the divider strip through the clip aperture.

4,499,129

PARTIALLY RECOVERABLE CLOSURE

Thomas A. Kridl, Union City; Carney P. Claunch, Redwood City, and Ann O. Bjornstrom, Menlo Park, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Oct. 14, 1983, Ser. No. 541,944

Int. Cl.³ F16L *0/00*; **H01R** *4/00*

U.S. Cl. 428—36 **2 Claims**

1. A wraparound closure having:

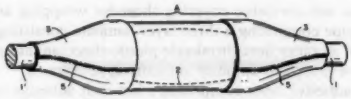
longitudinal edge regions which can be brought together to form a closure around a substrate;

a closure means for holding the edge regions in abutting position;

a flap extending from one edge region underneath the abut-

ting area of the edge regions to provide a seal of the gap between the abutting edge regions; and

wherein a portion of the wraparound closure recovers to a decreased diameter to engage the substrate and wherein a portion of the wraparound closure does not significantly recover to engage the substrate,



the improvement comprising resilient support means engaging the flap to provide sufficient pressure on the flap to assure sealing of the flap across the gap between the abutting edge regions, the resilient support means for the flap being partially positioned within an open envelope with the envelope being attached to the closure in its place prior to recovery of the closure.

4,499,130

TEMPORARY STRIPPABLE PROTECTIVE LAMINATE

John M. Questel, Stow, and Ralph J. Madonia, Kent, both of Ohio, assignors to Carprotec, Inc., Kent, Ohio

Filed Mar. 1, 1982, Ser. No. 353,625

Int. Cl.[3] B32B *7/06*

U.S. Cl. 428—42 **7 Claims**

1. A temporary strippable protective covering for an applied material namely carpeting and decorative textile material used in vehicles, comprising:

(A) a sheet of stretchable plastic film having a substantially uniform thickness;

(B) a cross-linked acrylic, resin based, pressure sensitive adhesive on one surface of said film for releasable adherence of said film to the applied material; and

(C) said adhesive being such that it resists adhesive transfer to the applied material and has preferential adhesion failure to the applied material.

4,499,131

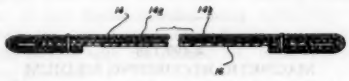
REUSABLE MOISTURE IMPERVIOUS UNDERPAD

Frank A. Knox, Urbana, Ill., assignor to Albert Shelton and Verma Shelton, both of Urbana, Ill.

Filed Mar. 17, 1983, Ser. No. 476,033

Int. Cl.[3] B32B *3/04, 25/10*

U.S. Cl. 428—68 **2 Claims**



1. An underpad for use in situations where it is desirable to minimize moisture or fluid penetration from one side of the pad to the other side and which is repeatably washable and dryable said pad exhibiting substantial degradation resistance over two hundred (200) washing and drying operations, said pad comprising:

at least two layers of material secured to each other to form the pad;

one layer comprising a facing fabric ply which includes two plies of cotton flannel and the other layer comprising a moisture-resistant neoprene-coated nylon ply which resists degradation after repeated institutional washings and dryings at temperatures on the order of 225° F., said facing ply and said moisture-resistant ply layer secured to each other about the periphery of the pad, and said facing layer overlying the edge of said moisture-resistant layer so as to form a hem about the periphery of said pad.

4,499,132

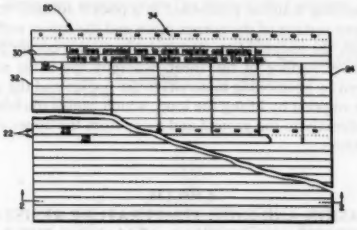
VISIBLE INDEXES

Alexander P. Janssen, 28 Old Farm Rd., Belair, Charlottesville, Va. 22903

Continuation of Ser. No. 98,836, Nov. 30, 1979, abandoned, which is a continuation of Ser. No. 795,881, May 11, 1977, abandoned, which is a continuation of Ser. No. 505,078, Sep. 11, 1974, abandoned. This application Jan. 26, 1981, Ser. No. 228,358

Int. Cl.[3] B32B *3/14, 3/16*

U.S. Cl. 428—77 **2 Claims**



1. The combination of a plurality of separate and independent index strips, a backing sheet, and means for removably attaching said index strips in juxtaposed relationship to said backing sheet, said index strips being of multiple ply construction and comprising: a first ply composed of a fibrous, cellulosic mat impregnated with from 25 to 75 percent by weight of a partially cured, resin modified, cross-linked urea formaldehyde resin; a second ply made of paper; means bonding said second ply in face-to-face relationship with said first ply, thereby leaving exposed a surface of the second ply; a third ply made of paper; and means bonding said third ply in face-to-face relationship to said first ply on the opposite side thereof from the second ply to thereby promote the desirable physical characteristics of the index strip and the means removably attaching said index strips to said backing sheet comprising a releasable adhesive which, in the aforesaid combination, extends between and into contact with said index strips and said backing sheet and has an adhesive strength with respect to said strips and said backing sheet which is greater than its cohesive strength, the adhesive forming with said backing sheet and said index strips bonds which have greater strength than the adhesive and permit said strips to be detached from the backing sheet by merely mechanically rupturing the adhesive and without tearing or otherwise damaging the strips or removing backing sheet mterial with the strips.

4,499,133

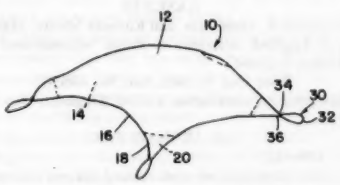
MULTI-PURPOSE SHEET

Connie J. Prince, 250 Ohua #9C, Honolulu, Hi. 96815

Filed May 9, 1983, Ser. No. 492,680

Int. Cl.[3] A45F *4/00;* B32B *3/02*

U.S. Cl. 428—81 **9 Claims**



1. A lightweight multi-purpose sheet comprising a large, flat

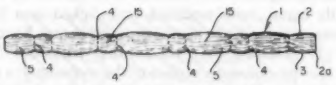
body having upper and lower sides and having peripheral edges, the peripheral edges forming at least one corner, a triangular piece mounted in the corner, the triangular piece having upper and lower surfaces and having first and second and third edges, the upper surface of the corner piece being juxtaposed to a lower surface portion of the multi-purpose sheet and first and second edges of the corner piece being connected to portions of the edges of the sheet which form the corner, a cord extending from the corner and having a remote loop portion spaced from the corner and having a base mounted in the corner for cooperating with the corner piece to hold the corner and the sheet anchored and to raise the corner for emptying material positioned in a pocket formed between the upper surface of the corner piece and the lower surface of the sheet, the pocket being positioned beneath a corner portion of a lower surface of the sheet, whereby the sheet may be anchored by positioning materials in the pocket and the pocket may be emptied by lifting the loop, which causes the materials to fall directly to the ground and away from the upper surface of the sheet.

4,499,134

ABRASION AND HIGH TEMPERATURE RESISTANT COMPOSITE AND METHOD OF MAKING THE SAME

Elliot F. Whitely, Milton Hills; Richard A. Devoe, and Gerald W. Gadbois, both of Rochester, all of N.H., assignors to Lydall, Inc., Manchester, Conn.

Filed Oct. 24, 1983, Ser. No. 544,863
Int. Cl.³ B32B *3/06*
U.S. Cl. 428—102 **22 Claims**



1. A composite having improved structural integrity and suitable for use in abrasive, high temperature environments, comprising:

(1) randomly laid and oriented heat resistant fibers interlocked together into the form of a shape sustaining paper having two lateral surfaces, said paper having a thickness of from about 0.01 to 0.50 inch.

(2) an abrasion-resistant, high temperature resistant, flexible, woven or non-woven scrim having a weight of from 0.5 to 10 oz./yd^2 disposed upon at least one of the lateral surfaces of the said paper; and

(3) a network of abrasion-resistant, high temperature-resistant threads stitched through said scrim and said paper in the form of stitching lines of a repeating enclosed pattern such that said scrim is mechanically locked to said paper by said threads;

whereby, the said network of threads and said scrim substantially retain the structural integrity of the said paper under abrasion conditions.

4,499,135

GASKETS

Barclay Mitchell, Amersham, and Kenneth Moore, Maidenhead, both of England, assignors to Payez International Limited, Berkshire, England

Filed Dec. 6, 1982, Ser. No. 446,871
Claims priority, application United Kingdom, Dec. 9, 1981, 81370114
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—137 **6 Claims**

1. A gasket impregnated with a cured silicone resin manufactured from paper which is essentially free from amine containing material and which is bonded with a sulphur-free or sulphur donor free rubber binder.

4,499,136

ANTI-CORROSIVE COVERING SHEET

Yukio Nakamura, and Tsuneo Tanaka, both of Ichihara, Japan, assignors to Ube Industries Ltd., Ube, Japan

Filed Jun. 10, 1983, Ser. No. 503,221
Claims priority, application Japan, Jun. 18, 1982, 57-103741
Int. Cl.³ C23F *13/00*; D03D *49/24*
U.S. Cl. 428—206 **20 Claims**

1. An anti-corrosive covering sheet for wrapping aroung a metal pipe comprising a three layer laminate consisting essentially of an outer heat-shrinkagle plastic sheet, an intermediate adhesive layer and an outer anti-corrosive layer

said adhesive layer comprising a hot-melt adhesive material having a melting temperature of not lower than 50° C. and containing 30–80% by weight of an adhesive olefin copolymer; and

said anti-corrosive layer has a thickness in the range of 1–10 microns, and contains an anti-corrosive agent selected from the group consisting of organic anti-corrosive agents and inorganic anti-corrosive agents dispersed in the same hot-melt adhesive material which comprises said adhesive layer in an amount of 0.01–1 mg/cm^2.

4,499,137

SCUFF-RESISTANT LAMINATES

Robin D. O'Dell, Pasadena; Israel S. Ungar, and Herbert I. Scher, both of Randallstown, all of Md., assignors to Nevamar Corporation, Odenton, Md.

Filed Aug. 9, 1983, Ser. No. 521,762
Int. Cl.³ B32B *3/00, 7/14, 5/18, 9/06*
U.S. Cl. 428—211 **9 Claims**

1. A stain- and scuff-resistant decorative laminate comprising a backing layer and laminated thereto a thermoset laminating resin impregnated facing sheet, said facing sheet having thereon an ultra-thin facing layer comprising

(1) a solid, particulate lubricant in an amount sufficient such that, during use of the facing sheet to make decorative laminate, the particulate lubricant melts and blooms to the surface thereby providing a decorative laminate having simultaneously good clarity and improved scuff resistance, with the proviso that said solid lubricant is not an oxidized wax or a silicone resin, and

(2) sufficient binder material for said particles of lubricant to bind said particles to the surface of said facing sheet, said facing sheet being impregnated with a thermosetting resin compatible with said binder material, the particulate lubricant having melted and having bloomed to the surface during the laminating of said facing sheet to said backing layer.

4,499,138

MAGNETIC RECORDING MEDIUM

Nobuyuki Yamamoto, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 289,857, Aug. 4, 1981, Pat. No. 4,456,661.
This application Feb. 1, 1984, Ser. No. 575,738
Claims priority, application Japan, Aug. 15, 1980, 55-112415
Int. Cl.³ G11B *5/72*
U.S. Cl. 428—216 **7 Claims**

1. A magnetic recording tape comprising:

a base;

a thin magnetic metal layer formed on a first side of said base;

a thin metal film formed on a second side of said base wherein, said thin metal film is comprised of a metal selected from the group consisting of Mg, Ca, Sr, Ba, Cu, Zn, Cd, Sn and Pb; and

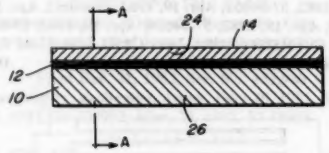
a layer of aliphatic acid formed on said thin metal film wherein said thin magnetic metal film chemically reacts with said aliphatic acid layer.

4,499,139

MICROSIZED FABRIC

Walter E. Schortmann, West Hartford, Conn., assignor to The Kendall Company, Boston, Mass.

Filed Mar. 2, 1984, Ser. No. 585,696
Int. Cl.[3] B32B 7/00
U.S. Cl. 428—245 14 Claims



1. A porous, breathable, liquid and bacterial barrier material comprising: a single ply fibrous web having a substantially froth-free face surface, a sized inner core and a substantially froth-free backing surface and, said sized inner core includes a froth size within said web disposed beneath said face surface; said backing surface being substantially free of said froth size, said froth size further including a plurality of micropores disposed throughout.

4,499,140

PRESSURE-SENSITIVE TRANSFER ELEMENTS AND METHOD

Albert E. Brown, Locust Valley, and Robert T. Emerson, Manhasset, both of N.Y., assignors to Leedall Products Incorporated, New York, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,116
Int. Cl.[3] B32B 5/18
U.S. Cl. 428—308.4 12 Claims

1. Pressure-sensitive multiple use transfer element comprising a flexible foundation supporting a hot-melt-applied substantially nonfrangible coating containing a pressure-exudable fluid transfer ink, said coating comprising a cohesive solid binder material comprising a major amount by weight of at least one meltable hard wax and a minor amount by weight of at least one meltable synthetic resin which is adhesive and is compatible with said wax, and a fluid ink comprising at least one oleaginous vehicle which is substantially incompatible with said wax and substantially compatible with said meltable synthetic resin, and a dyestuff dissolved in said vehicle, said ink being uniformly dispersed throughout said coating in the form of ink droplets which are pressure-exudable from said coating to a copy sheet under the effects of imaging pressure, the surface of said binder material being sufficiently adhesive relative to the copy sheet to adhere thereto and transfer minor portions thereof with the exuded ink, under the effects of imaging pressure.

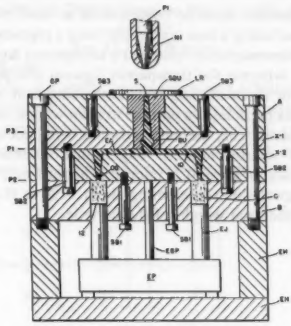
7. Process for producing a pressure-sensitive multiple use transfer element comprising the steps of producing a molten coating composition comprising a cohesive solid binder material containing a major amount by weight of at least one melted hard wax and a minor amount by weight of at least one melted synthetic resin which is adhesive and is compatible with said wax, a fluid ink comprising at least one oleaginous vehicle which is substantially incompatible with said wax and substantially compatible with said synthetic resin and a dyestuff dissolved in said vehicle, said ink being uniformly dispersed throughout said coating composition, applying said molten composition as a uniformly-thin layer to a flexible foundation, and cooling said layer to form a substantially nonfrangible cohesive layer of said binder material having said ink uniformly dispersed therethrough in the form of ink droplets which are pressure-exudable from said coating to a copy sheet under the effects of imaging pressure, the surface of said binder material being sufficiently adhesive relative to the copy sheet to adhere thereto and transfer minor portions thereof, with the exuded ink, under the effects of imaging pressure.

4,499,141

COMPOSITION FOR MAKING A PLASTIC CLOSURE FOR LIQUID PRODUCT CONTAINERS

Gary V. Paisley, Atlanta, Ga.; J. George Altschuler, Montreal, Canada, and Josef Rommler, Merklinger bei Ulm, Fed. Rep. of Germany, assignors to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 202,156, Sep. 2, 1980, Pat. No. 4,363,849.
This application Sep. 2, 1982, Ser. No. 414,048
Int. Cl.[3] B29D 27/00; B29F 1/04
U.S. Cl. 428—318.8 4 Claims



1. A molded synthetic closure for liquid product containers having been molded to product a liquid impervious outer skin formed over a foamed core and having an external appearance resembling that of natural cork comprising a mixture of

a major amount of ethylene-vinyl acetate copolymer,

a minor amount of a hardness and strengthening additive selected from the group consisting of polyethylene and ethylenemethacrylic acid copolymer, and

a pigment for imparting the color of natural cork to the closure.

4,499,142

FACED MASONRY UNITS AND FACING COMPOSITION THEREFOR

Alan C. Kingston, Emigsville, Pa., assignor to Trenwyth Industris, Inc., Emigsville, Pa.

Filed Mar. 31, 1983, Ser. No. 480,897
Int. Cl.[3] B32B 13/12, 5/16, 27/36
U.S. Cl. 428—331 6 Claims

1. A faced masonry unit of the type including a masonry block and a decorative durable facing on at least one surface thereof, the facing being of a composition comprising; a silane surface-treated sand filler in a range of about 60 to 90% of the total weight of the facing composition, an isophthalic neopentyl glycol polyester in a range of about 10 to 40% of the total weight of the facing composition, styrene and methyl methacrylate monomers together with a range of about 5 to 15% of the weight of the total facing composition, alumina trihydrate at least 2% by weight of the total facing composition, and dimethyl methyl phosphonate incorporated into the composition in an amount sufficient to impart permanent flame and smoke suppression to the facing.

4,499,143

MULTILAYER AUTOMATIVE PAINT SYSTEM

Sol Panush, Farmington Hills, Mich., assignor to Inmont Corporation, Clifton, N.J.

Filed Aug. 26, 1983, Ser. No. 526,724
Int. Cl.[3] B32B *15/08, 27/00;* B05D *1/36, 7/00*
U.S. Cl. 428—336 4 Claims

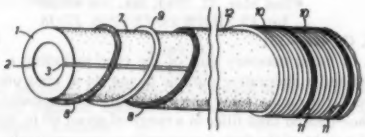
1. A substrate material coated with at least two layers of polymer including a base coat comprising a pigmented thermosetting or thermoplastic resin and a transparent topcoat on the base coat, wherein the transparent topcoat comprises a thermoplastic or thermosetting resin containing iron oxide encapsulated mica particles in a particle to resin weight ratio of about 0.0001 to about 0.32, the mica particles being about 5 microns to about 60 microns nominal longitudinal dimension and having a thickness of about 0.25 micron to about 1 micron, the iron oxide encapsulation representing about 10% to about 85% by weight of the total weight of the particle.

4,499,144

FLUID CONTAINING STRING WITH OPENING TO PASS FLUID FROM CORE

Jacob van Rijswijk, Berkel en Rodenrijs, Netherlands, assignor to Jacotra A. G., Switzerland

Continuation-in-part of Ser. No. 257,103, Apr. 24, 1981, abandoned. This application Jan. 13, 1983, Ser. No. 457,523
Claims priority, application United Kingdom, Apr. 28, 1980, 8013945
Int. Cl.[3] D07B *1/02*
U.S. Cl. 428—376 22 Claims



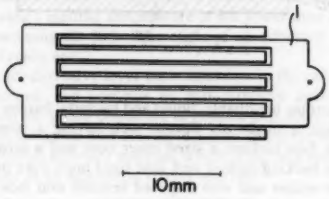
1. A string for sports rackets which comprises a core, the core being constituted by one or more synthetic polymeric monofilaments, the, or at least one of the monofilaments having a longitudinal bore, and, along the length of the bore, one or more openings for the passage of fluid from the bore, the core being covered by at least one wrapping of synthetic polymeric material.

4,499,145

METAL-CLAD LAMINATE AND PROCESS FOR PRODUCING THE SAME

Tomomi Yanagida; Mitunori Ajiki, and Shigeru Suzuki, all of Fujieda, Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 480,034
Claims priority, application Japan, Apr. 19, 1982, 57-64050; Apr. 19, 1982, 57-64051; Apr. 19, 1982, 57-64052; Apr. 19, 1982, 57-64053; Apr. 19, 1982, 57-64054; Apr. 19, 1982, 57-64055
Int. Cl.[3] B32B *15/08, 27/06;* C25D *5/56;* C09J *5/02*
U.S. Cl. 428—418 14 Claims



1. A metal-clad laminate comprising:
a base plate; and
a layer of metal foil on at least one side of said base plate;
said base plate including, in order, a first electrically insulating material layer composed of a cross-linked silane-modified polyethylene resin laminated to a layer of said metal foil, and a second electrically insulating material layer made of paper or cloth containing an epoxy resin, a silanol condensation catalyst or a mixture of said epoxy resin and said silanol condensation catalyst laminated to said first electrically insulating layer.

4,499,146

PROTECTING MATERIALS SUBJECT TO DEGRADATION BY ATMOSPHERIC AND POLLUTING AGENTS BY MEANS OF PERFLUOROPOLYETHERS

Franco Piacenti, Florence; Federigo Ciampelli, and Adolfo Pasetti, both of Milan, all of Italy, assignors to Montedison S.p.A., Milan and Consiglio Nazionale Delle Ricerche, Rome, both of, Italy

Continuation of Ser. No. 503,736, Jun. 13, 1983, abandoned, which is a continuation of Ser. No. 352,018, Feb. 24, 1982, abandoned. This application Nov. 28, 1983, Ser. No. 555,401
Claims priority, application Italy, Feb. 24, 1981, 19933 A/81
Int. Cl.[3] B32B *27/00;* C14C *9/00*
U.S. Cl. 428—422 7 Claims

1. A process for protecting marble, stones, tiles and articles manufactured from such materials from the degrading action caused by atmospheric agents and pollutants, which comprises applying to the surfaces of said materials and manufactured articles a protective coating comprising, as essential protective agent, a fluid perfluoropolyether having at least one of the following general formulae:

$$A-O(CF-CF_2O)_p-(CF_2-O)_q-(CF-O)_r-B \quad (I)$$
$$\quad\quad CF_3 \quad\quad\quad\quad\quad\quad CF_3$$

and

$$A-O-(C_2F_4-O)_m-(CF_2O)_n-B \quad (II)$$

wherein p, q and r are integers, q and r may be equal to zero, the sum p+q+r is an integer from 5 to 250, m and n are integers, n may be equal to zero, the sum m+n is an integer from 10 to 1000, A and B are perfluoroalkyl radicals containing 1 to 3 carbon atoms, said fluid perfluoropolyether being applied as

such or diluted with a solvent or mixture of solvents having a boiling temperature below 80° C.

4,499,147

SILICON CARBIDE SUBSTRATES AND A METHOD OF PRODUCING THE SAME

Ryo Enomoto, Ohgaki; Hidetoshi Yamauchi, Gifu, and Shoji Tanikawa, Ohgaki, all of Japan, assignors to Ibiden Co., Ltd., Japan

Filed Dec. 21, 1982, Ser. No. 451,940

Claims priority, application Japan, Dec. 28, 1981, 56-209991; Dec. 28, 1981, 56-209992; Mar. 29, 1982, 57-48958

Int. Cl.³ C03C *3/12*

U.S. Cl. 428—428 **16 Claims**

1. A silicon carbide substrate having excellent electrical insulation properties, comprising:

a silicon carbide sintered plate body; and

a eutectic oxide layer closely adhered to a surface of said sintered plate body and comprising at least 30% by weight of SiO_2 produced by oxidation of silicon carbide constituting said sintered plate body and Al_2O_3 and an oxide of at least one element selected from the group consisting of phosphorus, boron, germanium, arsenic, antimony, bismuth, vanadium, zinc, lead, cadmium, sodium, potassium, lithium, beryllium, calcium, magnesium, barium and strontium, said eutectic oxide layer having a molar ratio of Al_2O_3 to SiO_2 of 0.024–1.800, the thickness of said eutectic layer being in the range of 0.5–100 μm.

4,499,148

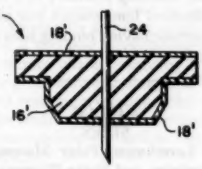
COMPOSITE MATERIALS OF SILICONE ELASTOMERS AND POLYOLEFIN FILMS, AND METHOD OF MAKING

Robert H. Goodale, Boulder, Colo., and James M. DuJack, Brunswick, N.Y., assignors to Canton Bio-Medical Products, Inc., Boulder, Colo. and Visilox Systems, Inc., Troy, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,637

Int. Cl.³ B29C *19/02, 19/04, 19/06;* B65C *9/25*

U.S. Cl. 428—447 **10 Claims**



1. A method of chemically bonding elastomeric materials to chemically inert polyolefins, the method comprising:

exposing a chemically inert polyolefin surface to a corona discharge treatment,

applying to the corona discharge treated surface of the polyolefin a primer solution of ethyl silicate, ethyl ortho silicate and tetra butyl titanate in an organic solvent,

placing the treated and primed surface of polyolefin in contact with the surface of an uncured elastomeric compound of molecular weight above 61,000 with a minimum elongation modulus of fifty percent; and

applying heat to the composite material to cure the elastomeric compound while pressing the polyolefin elastomeric compound article firmly together, whereby upon curing of the elastomeric material the polyolefin will be firmly and securely bonded thereto.

4,499,149

SILOXANE-CONTAINING POLYMERS

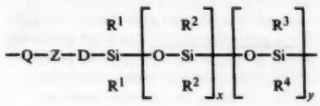
Abe Berger, Summit, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

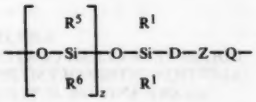
Division of Ser. No. 216,599, Dec. 14, 1980, Pat. No. 4,395,527, which is a continuation-in-part of Ser. No. 158,056, Jun. 9, 1980, abandoned, Ser. No. 174,400, Aug. 1, 1980, abandoned, Ser. No. 126,666, Mar. 3, 1980, abandoned, Ser. No. 205,120, Nov. 10, 1980, abandoned, and Ser. No. 51,699, Jun. 25, 1979, abandoned, said Ser. No. 158,056, is a continuation-in-part of Ser. No. 958,356, Nov. 6, 1978, abandoned, said Ser. No. 174,400, is a continuation-in-part of Ser. No. 907,155, May 17, 1978, abandoned, said Ser. No. 126,666, is a continuation-in-part of Ser. No. 11,901, Feb. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 906,877, May 17, 1980, Pat. No. 4,139,547, said Ser. No. 205,120, is a continuation of Ser. No. 16,412, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 907,155, May 17, 1978, abandoned, said Ser. No. 51,699, is a continuation-in-part of Ser. No. 907,155, May 17, 1978, abandoned. This application Feb. 15, 1983, Ser. No. 466,762

Int. Cl.³ B32B *9/04*

U.S. Cl. 428—447 **34 Claims**

1. An article of manufacture comprising a substrate comprising a semiconductor device having disposed thereon a polyimide, poly(amide-imide) or poly(half-amide) composition comprising a polyimide, poly(amide-imide) or a poly(half-amide) containing a thermally stable siloxane unit of formula

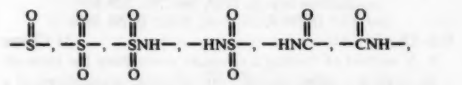




where

Q is a substituted or unsubstituted aromatic group

Z is —O—, —S—,



D is unsubstituted or substituted hydrocarbylene;

R^1, R^2, R^3, R^4, R^5 and R^6 each independently is unsubstituted or substituted hydrocarbyl;

x, y and z each independently has a value from 0 to 100.

4,499,150

COLOR PLUS CLEAR COATING METHOD UTILIZING ADDITION INTERPOLYMERS CONTAINING ALKOXY SILANE AND/OR ACYLOXY SILANE GROUPS

Rostyslaw Dowbenko; Raymond S. Stewart, both of Gibsonia; Marvis E. Hartman, Pittsburgh; Barbara Gorman, Allison Park, and Stephen J. Thomas, Aspinwall, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1983, Ser. No. 480,152

Int. Cl.³ B05D *1/36, 3/02, 7/00;* B32B *9/04*

U.S. Cl. 428—447 **37 Claims**

1. A method of coating a substrate comprising the steps of:

(a) coating a substrate with one or more applications of a pigmented basecoating composition comprising an addition interpolymer having alkoxy silane groups and/or acyloxy silane groups, said addition interpolymer derived from the reaction of a mixture of monomers wherein the mixture of monomers consists essentially of:

(i) from about 50 percent to about 95 percent by weight of at least one ethylenically unsaturated silicon-free monomer, and

(ii) from about 5 percent to about 50 percent by weight of a copolymerizable ethylenically unsaturated silane monomer selected from the group consisting of an alkoxy silane monomer, an acyloxy silane monomer, and a mixture thereof, wherein the interpolymer has a peak molecular weight, as determined by gel permeation chromatography, of from about 2,000 to about 20,000 and a calculated glass transition temperature of at least about 25° C., to form a basecoat; and before a substantial amount of drying or curing of said basecoat has occurred

(b) coating the basecoat with one or more applications of a topcoating composition comprising a film-forming resin to form a clear topcoat;

wherein, after said steps (a) and (b), said basecoat and said topcoat dry or cure together.

16. The product produced by the method of claim 1.

4,499,151

COLOR PLUS CLEAR COATING METHOD UTILIZING ADDITION INTERPOLYMERS CONTAINING ALKOXY SILANE AND/OR ACYLOXY SILANE GROUPS

Rostyslaw Dowbenko; Raymond S. Stewart, both of Gibsonia; Marvis E. Hartman, Pittsburgh; Barbara Gorman, Allison Park, and Stephen J. Thomas, Aspinwall, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 480,152, Mar. 29, 1983. This application Sep. 6, 1983, Ser. No. 529,469

Int. Cl.[3] **B05D** *1/36, 7/00, 3/02;* **B32B** *9/04*

U.S. Cl. 428—447 **31 Claims**

1. A method of coating a substrate comprising the steps of:

(a) coating a substrate with one or more applications of a pigmented basecoating composition comprising an addition interpolymer having alkoxy silane groups and/or acyloxy silane groups, said addition interpolymer derived from the reaction of a mixture of monomers wherein the mixture of monomers consists essentially of:

(i) from about 50 percent to about 95 percent by weight of at least one ethylenically unsaturated silicon-free monomer, and

(ii) from about 5 percent to about 50 percent by weight of a copolymerizable ethylenically unsaturated silane monomer selected from the group consisting of an alkoxy silane monomer, an acyloxy silane monomer, and a mixture thereof, to form a basecoat; and before a substantial amount of drying or curing of said basecoat has occurred

(b) coating the basecoat with one or more applications of a topcoating composition comprising a film-forming resin to form a clear topcoat;

wherein, after said steps (a) and (b), said basecoat and said topcoat dry or cure together.

14. The product produced by the method of claim 1.

4,499,152

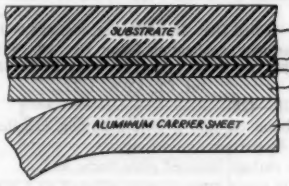
METAL-CLAD LAMINATE CONSTRUCTION

Robert W. Green, and Delton A. Grey, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 406,588, Aug. 9, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,031

Int. Cl.[3] **B32B** *9/04;* **B05D** *5/12*

U.S. Cl. 428—448 **15 Claims**



1. A metal-clad laminate comprising a substrate, an interacted coupling agent layer extending over and bonded to a major surface of said substrate, a layer of ultra-thin copper adjacent said layer of interacted coupling agent and a composite bonding layer interconnecting said copper layer and said interacted coupling agent layer, said composite bonding layer being substantially free of copper oxide and comprising regions of copper alloyed with a second metal and oxide of said second metal.

11. The method of making a copper-clad laminate comprising the steps of:

(a) maintaining a carrier sheet with the temperature of a major surface thereof in a preselected temperature range while forming a copper film on said major surface by vapor depositing copper directly thereon,

(b) depositing a layer of an oxide material over said copper film under conditions of temperature and pressure substantially precluding the formation of copper oxide, said oxide material comprising an oxide of a non-copper metal,

(c) coating said oxide material layer with a solution containing coupling agent,

(d) drying said coupling agent and

(e) laminating the resulting assembly to a major surface of a substrate at elevated temperature and pressure, said substrate major surface having binding sites available for said coupling agent.

4,499,153

SIZES

Wulf von Bonin, Leverkusen; Peter Mummenhoff, Cologne; Ulrich Beck, Bornheim, and Heinz Bäumgen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,708

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208139

Int. Cl.[3] **C08L** *91/00;* **D21D** *3/00;* **B32B** *27/06*

U.S. Cl. 428—479.6 **18 Claims**

1. Paper-size formulations containing in an aqueous alkaline dispersion products which are obtainable by reacting α,β-unsaturated carboxylic acids having 3 to 10 atoms or their halides, esters or partial esters with lower alcohols having 1 to 6 C atoms, and in the case of dicarboxylic acids their anhydrides with amide-amines of higher carboxylic acids at temperatures above 120° C., said amide-amines being obtainable by reacting 2 mols of aromatic, aliphatic and cyclic carboxylic acids having 10–26 C atoms with 1 mol of diethylenetriamine, triethylenetetramine, tetraethylenepentamine or pentaethylenehexamine.

4,499,154

DIPPED RUBBER ARTICLE

Michael H. James, Flamstead; David M. Bratby; Roger Duck, both of London, all of England; Howard I. Podell, 28 Beachfront La., New Rochelle, N.Y. 10805; Albert Goldstein, Tinton Falls, N.J., and David C. Blackley, Chesham, England, assignors to Howard L. Podell, New Rochelle, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,436

Claims priority, application United Kingdom, Sep. 3, 1982, 8225200

Int. Cl.[3] A41D *19/00*

U.S. Cl. 428—494 9 Claims

1. A flexible rubber article which has a coating comprising a lubricating hydrogel polymer bonded thereto to provide a surface of said article said surface coming in contact with the user's skin, wherein a member of the group consisting of surfactant materials and long chain fatty amines has been applied to said surface so as to substantially improve the donning lubricity of said surface with respect to damp skin.

4,499,155

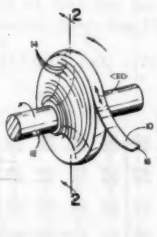
ARTICLE MADE FROM SHEET HAVING A CONTROLLED CRYSTALLOGRAPHIC ORIENTATION

Paul R. Holiday, deceased, late of Manchester, Conn.; by Suzanne N. Holiday, executrix, Point Pleasant Beach, and Bernard H. Kear, Whitehouse Station, both of N.J., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 25, 1983, Ser. No. 452,675

Int. Cl.[3] C22F *1/10*

U.S. Cl. 428—586 7 Claims



1. A circular article comprised of a nickel superalloy formed of a wrought textured material made by the steps of

(a) thermal mechanically working a sheet of metal to provide it with a textured crystallographic structure, said textured structure characterized by a selected crystallographic axis predominating along the length of the sheet, compared to random crystallographic orientation;

(b) winding the length of the sheet around a mandrel to form an article thereabouts, the article comprised of multiple wound layers;

(c) bonding the wound sheet layers to one another to form a monolithic article having a circumferential orientation corresponding with the selected crystallographic orientation which predominated along the length of the sheet.

4,499,156

TITANIUM METAL-MATRIX COMPOSITES

Paul R. Smith, Englewood, and Francis H. Froes, Beavercreek, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 22, 1983, Ser. No. 477,793

Int. Cl.[3] C22C *32/00*; C22F *1/18*

U.S. Cl. 428—614 3 Claims

1. A method for fabricating a titanium composite consisting of at least one filamentary material selected from the group consisting of silicon carbide, silicon carbide-coated boron, boron carbide-coated boron and silicon-coated silicon carbide, and a titanium alloy having the nominal composition Ti-4.5Al-5Mo-1.5Cr, which method comprises the steps of extensively mechanically working said alloy at about room temperature to obtain sheetstock in a desired thickness and having a grain size of less than 10 microns, fabricating a preform consisting of alternating layers of said sheetstock and at least one of said filamentary materials, and applying heat and pressure to consolidate said preform, wherein consolidation is carried out at a temperature about 10° to 100° C. below the beta-transus temperature of said alloy at a pressure in the approximate range of 10 to 100 MPa.

2. A titanium matrix composite structure consisting of at least one filamentary material selected from the group consisting of silicon carbide, silicon carbide-coated boron, boron carbide-coated boron, and silicon-coated silicon carbide embedded in a titanium alloy matrix having the nominal composition Ti-4.5Al-5Mo-1.5Cr, said composite having a reaction zone width at the filamentary material-matrix interface of less than about 0.5 μm.

4,499,157

SOLDERABLE PLATED PLASTIC COMPONENTS AND PROCESSES FOR MANUFACTURE AND SOLDERING

Richard R. Mulliner, and James S. Ajioka, both of Fullerton, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 31, 1983, Ser. No. 499,746

Int. Cl.[3] B29D *3/02*; B32C *15/08*

U.S. Cl. 428—624 6 Claims

1. A metal plated plastic article for assembly with compatible articles including metallic articles, the assembly comprising soldering by a hot oil dip soldering process or a vapor phase soldering process, the metal plated plastic article comprising:

a substrate comprising polyethersulfone impregnated with a selected amount of glass fill with chopped fibers, the amount selected so that the coefficient of thermal expansion of the polyethersulfone with glass fill is compatible with that of the metallic article to which it is to be assembled;

the surface of the substrate being physically and chemically altered prior to plating so as to accept a metal plating with a peel strength capable of withstanding a total immersion of the metal plated plastic article in a medium having a temperature of at least 232° C. for at least 60 seconds without delamination of the plating; and

metal plating on the substrate comprising a first layer of metal chemically deposited on the substrate and a second layer of metal electrolytically deposited on the first layer.

4,499,158

WELDED STRUCTURAL MEMBER HAVING HIGH EROSION RESISTANCE

Tsutomu Onuma, and Fumio Hataya, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 240,557, Mar. 4, 1981, abandoned. This application Feb. 15, 1983, Ser. No. 466,481

Claims priority, application Japan, Mar. 5, 1980, 55-26697

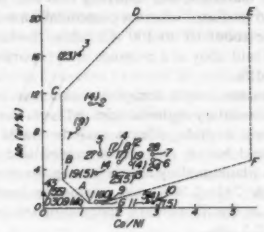
Int. Cl.[3] B32B *15/00*

U.S. Cl. 428—682 4 Claims

1. A welded structural member adapted to be subjected to a flowing fluid, said welded structural member comprising a base member consisting mainly of iron and a coating layer formed by build-up welding on said base member, said coating layer having a higher erosion resistance than said base member, characterized in that said coating layer contains 0.1 to 0.4 wt% of C, 0.1 to 1 wt% of Si, 3.6 to 5.6 wt% of Mn, 1 to 5.5. wt% of Ni, 2 to 12 wt% of Co, 16 to 23 wt% of Cr and the balance Fe, and has a value of 6–18 in Ni equivalent given by the following equation:

$$\text{Ni equivalent} = 30 \times C(wt\%) + \tfrac{1}{2} \times Mn(wt\%) + Ni(wt\%) + \tfrac{1}{2} \times Co(wt\%),$$

a Co/Ni ratio of 1.4 to 2.9, and further has a mainly unstable austenite structure containing less than 5% of ferrite, a percent elongation at failure of greater than 10% at room temperature



and an erosion weight loss of less than 1.3 mg/cm^2 in an erosion test conducted for 2 hours stationary water by a magnetostriction vibration method at a frequency of 6.5 KHz and an amplitude of 120 μm.

4,499,159

X-RAY IMAGE CONVERTERS UTILIZING RARE EARTH OXYHALIDE PHOSPHORS

Marjorie J. Brines, South Euclid, and Jacob G. Rabatin, Montville, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,066
Int. Cl.^{3} G01J *1/58*; C09K *11/475*
U.S. Cl. 428—691 **8 Claims**

1. An improved X-ray image converter having phosphor crystals supported on a base member, said phosphor crystals having the general formula:

$$M_{1-w-y-z}OX:Tm_wYb_yA_z$$

wherein
M is one or more of La and Gd,
X is one or more of Cl and Br,
w is from about 0.0001 to about 0.01 mole per mole of phosphor,
y is from zero to about 0.01 mole per mole of phosphor
z is from about 0.0001 to about 0.01 mole per mole of phosphor, and
A is one or more of Pr and Nd,
said phosphor exhibiting relatively uniform ultraviolet emission scintillation intensities when excited by relatively equal energy X-ray photons from a radiation source in the 40–120 KVp range and a lower quatum noise than said phosphor absent A.

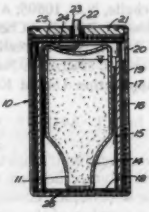
4,499,160

CATHODE AND ELECTROCHEMICAL CELL CONTAINING SAME

Matzliach Babai, 4, Bertonov St., Petah Tiqua, and Uzi Maishar, 4, Mordechai St., Ramat Hasharon, both of Israel

Continuation of Ser. No. 269,970, Jun. 3, 1981, abandoned. This application Jun. 20, 1983, Ser. No. 505,118
Claims priority, application Israel, Jun. 5, 1980, 60238
Int. Cl.^{3} H01M *4/36, 6/36, 4/58, 6/14*
U.S. Cl. 429—101 **16 Claims**

10. An electrical reserve cell comprising in combination a suitable inert housing, a cathode composed of porous carbon and a binder in combination with a transitional metal oxide, an oxidizable active anode, a suitable separator located between the said anode and the said cathode, an electrolyte solution contained in a hermetically sealed container which is shatterable when the cell is activated, resulting in a good contact of the electrolyte with said anode and said cathode, said electrolyte solution comprising an inorganic solvent and solute dissolved



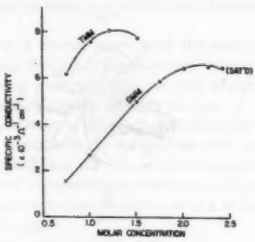
therein, said solvent serving also as cathode depolarizer, said cell being capable of rapid activation to maximum voltage.

4,499,161

ELECTROCHEMICAL CELL USING DIMETHOXYMETHANE AND/OR TRIMETHOXYMETHANE AS SOLVENT FOR ELECTROLYTE

Joseph S. Foos, Waltham, Mass., assignor to EIC Laboratories, Inc., Norwood, Mass.

Filed Apr. 25, 1983, Ser. No. 488,358
Int. Cl.^{3} H01M *6/14*
U.S. Cl. 429—196 **9 Claims**



1. A rechargeable electrochemical cell comprising a lithium-containing electrode and an electrolyte, said electrolyte consisting of
a lithium salt,
a solvent for said lithium salt consisting of a polymethoxy ether selected from dimethoxyethane and trimethoxymethane, and
an organic cosolvent comprising between 0 and 95% of said electrolyte, by volume,
said polymethoxy ether being present in said electrolyte in an amount sufficient to render the cycling efficiency of said electrolyte greater than said cycling efficiency of an electrolyte consisting of said lithium salt and said cosolvent.

4,499,162

PHOTOMASK AND METHOD OF USING SAME

Edward L. Banks, Whitehall Township, Lehigh County; Thomas S. Ellington, IV, Upper Milford Township, Lehigh County, both of Pa., and Birol Küyel, Hopewell Township, Mercer County, N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,371
Int. Cl.^{3} G03F *9/00*; G03C *5/06*
U.S. Cl. 430—5 **10 Claims**

1. A photomask comprising:

a light transmissive baseplate having a metallic pattern thereon;

a light transmissive coating covering the metallic patterned surface; and

a light transmissive coverplate having opposed, substantially parallel surfaces positioned on the light transmissive coating with an index matching fluid interposed therebetween.

4,499,163

SOLDERING MASK FORMED FROM A PHOTOSENSITIVE RESIN COMPOSITION AND A PHOTOSENSITIVE ELEMENT

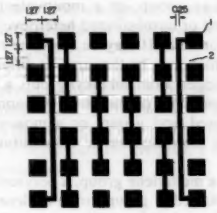
Toshiaki Ishimaru; Katsushige Tsukada; Nobuyuki Hayashi; Shigeru Koibuchi, and Asao Isobe, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 303,524, Sep. 18, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,660

Claims priority, application Japan, Sep. 19, 1980, 55-131322; Oct. 1, 1980, 55-137930

Int. Cl.³ G03C *5/00, 1/78*

U.S. Cl. 430—5 **28 Claims**



1. A photosensitive resin composition forming a soldering mask comprising:

(a) 20 to 75 parts by weight of at least one urethane diacrylate or urethane dimethacrylate compound which has acryloyl or methacryloyl groups in an amount of 1×10^{-3} to 4.3×10^{-3} equivalent/g. and which is obtained by reacting

(i) at least one diisocyanate compound selected from the group consisting of trimethylhexamethylene diisocyanate and isophorone diisocyanate,

(ii) a dihydric alcohol, and

(iii) an acrylic or methacrylic monoester of a dihydric alcohol,

(b) 20 to 75 parts by weight of a linear polymer having a glass transition temperature of about 40° to 150° C., and

(c) a sensitizer and/or a sensitizer system which generate free radicals owing to actinic light in an amount of 0.5 to 10% by weight based on the total amounts of components (a) and (b); said composition having been heated to 80° to 200° C. and exposed to actinic light after development by image-wise exposure and treatment with a developing solution.

4,499,164

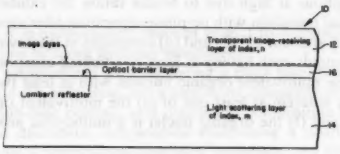
IMAGE CARRYING MEDIA EMPLOYING AN OPTICAL BARRIER

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 480,287, Mar. 30, 1983, abandoned, which is a continuation-in-part of Ser. No. 372,618, Apr. 28, 1982, abandoned. This application May 3, 1984, Ser. No. 606,580

Int. Cl.³ G03C *1/40, 5/54, 1/10, 7/00*

U.S. Cl. 430—14 **10 Claims**



1. An image carrying medium comprising:

a thin transparent layer for receiving image-forming components, said image-receiving layer having a given index of refraction;

a plurality of light-absorbing image forming components distributed imagewise of said image-receiving layer defining an image thereover and located at or nearly at one surface of said image-receiving layer so as not to be disposed at or nearly at the other surface of said image-receiving layer, said image being viewable through the other surface of said image-receiving layer;

a permanent, hardened, substantially chemically inert, clear optical barrier layer in contact with said one surface of said image-receiving layer, said optical barrier layer having an index of refraction which is no greater than that of said image-receiving layer; and

a light scattering pigment layer in direct contact with said optical barrier layer and having an index of refraction higher than that of said optical barrier layer,

said image-carrying medium being structured so that said image thereof is viewed through said other surface of said image-receiving layer against said light scattering pigment layer and wherein, for purposes of viewing, said image is illuminated by ambient light which first passes through said image-receiving layer and image and then is partially reflected from said light scattering pigment layer after which part of said reflected light is transmitted back through said optical barrier layer, said image, and said image-receiving layer to the viewer, said optical barrier layer operating to reduce the amount of light absorption which would otherwise occur within said image forming components absent said optical barrier layer whereby, when said image is viewed, its highlights are brightened and its tone reproduction improved compared with the appearance of said image absent said optical barrier layer.

4,499,165

AMORPHOUS COMPOSITIONS OF DYES AND BINDER-MIXTURES IN OPTICAL RECORDING ELEMENTS AND INFORMATION RECORDED ELEMENTS

Michel F. Molaire, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 9, 1983, Ser. No. 473,825

Int. Cl.³ G03C *1/00;* **G01D** *15/34*

U.S. Cl. 430—17 **14 Claims**

1. A recording element comprising a support having thereover a layer comprising an amorphous composition of a dye and a nonpolymeric binder-mixture at a high dye to binder-mixture ratio characterized in that the binder-mixture (a) is amorphous at high dye to binder ratios, (b) exhibits a single

thermal transition with no phase separation after annealing, (c) is solid at about 20° C., and (d) comprises at least two different compounds, each having at least two linking components joining one multivalent organic nucleus with at least two organic nuclei wherein at least one of (e) the multivalent organic nucleus and (f) the organic nuclei is a multicyclic aromatic nucleus.

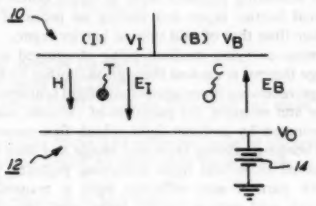
2. A recorded information element comprising a support having thereover a layer comprising an amorphous composition of a dye and a nonpolymeric binder-mixture at a high dye-binder ratio characterized in that the binder-mixture (a) is amorphous at high dye to binder ratios, (b) exhibits a single thermal transition with no phase separation after annealing, (c) is solid at about 20° C., and (d) comprises at least two different compounds each having at least two linking components joining one multivalent organic nucleus with at least two organic nuclei wherein at least one of (e) the multivalent organic nucleus and (f) the organic nuclei is a multicyclic aromatic nucleus.

4,499,166

METHOD OF DEVELOPING AN ELECTROSTATIC LATENT IMAGE USES MAGNETIC DEVELOPER

Yoshikazu Okamoto, Tokyo, Japan, assignor to Rank Xerox, Ltd., London, England

Filed Jun. 15, 1981, Ser. No. 273,283
Claims priority, application Japan, Jun. 16, 1980, 55-80314
Int. Cl.³ G03G *13/09*
U.S. Cl. 430—33 **4 Claims**



1. A method of electrophotographic printing, including the steps of:

recording electrically charged image and non-image regions on a photoconductive member;

moving a magnetic developer mixture support to transport at least a portion of a developer mixture into contact with the photoconductive member with the developer mixture comprising at least magnetically attractable toner particles and magnetically attractable carrier granules adhering triboelectrically to one another and being of substantially the same size and weight with the carrier granules being more strongly magnetically attractable than the toner particles; and

electrically biasing the developer mixture support so that the electrical force applied on the toner particles by the image region is greater than the magnetic force applied thereon and the electrical force applied on the carrier granules by the non-image region is less than the magnetic force applied thereon so that at least some of the toner particles are deposited on the image region forming a toner powder image thereon with the carrier granules remaining substantially on the developer mixture support.

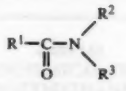
4,499,167

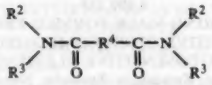
PHOTOCONDUCTIVE COMPOSITIONS COMPRISING AN ORGANIC PHOTOCONDUCTOR AND AN AMIDE COMPOUND AND ELECTRO-PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS USING THE COMPOSITIONS

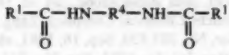
Kenji Sano; Syunichi Kondo, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1982, Ser. No. 449,729
Claims priority, application Japan, Dec. 14, 1981, 56-201306
Int. Cl.³ G03G *5/09*
U.S. Cl. 430—83 **8 Claims**

1. A photoconductive composition, comprising a mixture of: an organic photoconductor and an amide compound, wherein said amide compound is a compound selected from the group consisting of general formula I, II, and III;


I


II


III

wherein, R^1 represents an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, a substituted or unsubstituted monocyclic or bicyclic condensed aryl group; a substituted or unsubstituted monocyclic or bicyclic condensed aryloxy group, or a monovalent group induced from a substituted or unsubstituted heterocyclic ring; said two R^1s in general formula III may be the same or different;

R^2 and R^3, which may be the same or different, each represents a hydrogen atom, an alkyl group, a substituted alkyl group, a substituted or unsubstituted monocyclic or bicyclic condensed aryl group, or a monovalent group induced from a substituted or unsubstituted heterocyclic ring; and

R^4 represents a methylene group, a polymethylene group, a branched alkanediyl group, or an arylene group;

said R^1 and R^2 or said R^2 and R^3 in general formula I, R^2 and R^3, or, R^2 or R^3 and R^4 in general formula II and R^1 and R^4 in general formula III may combine with each other.

4,499,168

FIXING METHOD

Yasuo Mitsuhashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 348,171, Feb. 12, 1982, abandoned, which is a continuation of Ser. No. 166,918, Jul. 9, 1980, abandoned. This application Apr. 27, 1984, Ser. No. 605,973
Claims priority, application Japan, Jul. 17, 1979, 54-90745; Aug. 10, 1979, 54-102489
Int. Cl.³ G03G *13/20*
U.S. Cl. 430—99 **23 Claims**

1. A fixing method which comprises fixing a developing powder by means of a fuser roller wherein said developing powder comprises one or more vinyl type copolymers exhibiting a peak value of molecular weight in each of the molecular weight regions of 5×10^3 to 8×10^4 and 10^5 to 2×10^6, respectively, in a chromatogram as measured by gel permeation chromatography, wherein the content of said vinyl copolymers is 30 to 99% by weight with respect to the total weight of the developer powder and further containing an ethylene type

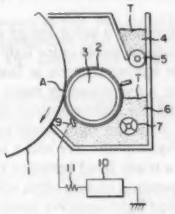
olefin homopolymer or ethylene type olefin copolymer having a melt viscosity of 10 to 10^6 cps at 140° C.

4,499,169

DEVELOPING METHOD

Satoshi Haneda; Masahiko Itaya, and Makoto Tomono, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,180
Claims priority, application Japan, Dec. 22, 1981, 56-208691
Int. Cl.³ G03G *13/09*
U.S. Cl. 430—102 **9 Claims**



1. In a developing method in which an insulating magnetic toner contacts an electrostatic image carrier and an electrostatic image is developed on the carrier, and in which said developing method includes the step of impressing on the toner an alternating electric field that satisfies the following conditions, in combination with a magnetic bias operating to restrain the movement of the magnetic toner toward the image carrier:

condition-1: $V/d \geqq 0.1\ \nu$

condition-2: $V/d \leqq 1+\nu$

in which V represents the effective voltage impressed on the insulating magnetic toner, d represents the clearance in millimeters between the electrostatic image carrier and a developing sleeve, and ν represents the frequency in kilohertz of the alternating electric field.

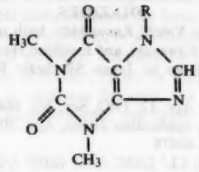
4,499,170

LITHOGRAPHIC PLATES AND PHOTORESISTS HAVING STABILIZED PHOTOSENSITIVE DIAZO RESIN WITH THEOPHYLLINE DERIVATIVE

Luigi Amariti, Bloomingdale, and Llandro C. Santos, Chicago, both of Ill., assignors to Richardson Graphics Company, Des Plaines, Ill.

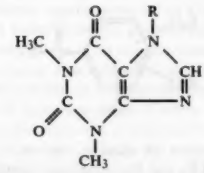
Filed Jun. 17, 1983, Ser. No. 505,231
Int. Cl.³ G03C *1/60, 1/74;* G03F *7/16*
U.S. Cl. 430—169 **17 Claims**

1. An article having a stabilized photosensitive diazonium composition coated thereonto, said stabilized diazonium composition comprising a coating from a composition consisting essentially of a solvent, a photosensitive diazonium resin and a stabilizing system, said stabilizing system including a purine derivative, said purine derivative being at a concentration that is effective in enhancing the stability of the photosensitive diazonium resin coated on the article and that is no greater than a concentration at which the purine derivative is dispersible within said composition, wherein said purine derivative is a theophylline derivative of the structural formula:



wherein R is hydrocarbon chain of from 1 to 5 carbon atoms and has one or more hydroxy substituents.

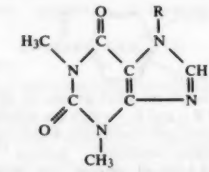
14. A presensitized plate including a plate base, a sub-base coating on the plate base, and a diazonium composition overlying the sub-base coating, said diazonium composition being a stabilized diazonium composition comprising a coating laid down from a composition consisting essentially of a solvent, a photosensitive diazonium resin and a stabilizing system, said stabilizing system including a purine derivative, said purine derivative being at a concentration that is effective in enhancing the stability of the photosensitive diazonium resin coated on the plate and that is no greater than a concentration at which the purine derivative is dispersible within said composition, wherein said purine derivative is a theophylline derivative of the structural formula:



wherein R is hydrocarbon chain of from 1 to 5 carbon atoms and having one or more hydroxy substituents.

16. A method for stabilizing a diazonium component of a plate, comprising:

preparing a composition consisting essentially of a solvent, a photosensitive diazonium resin and a stabilizing system, said stabilizing system including a purine derivative, said purine derivative being at a concentration that is effective in enhancing the stability of the photosensitive diazonium resin coated on the plate and that is no greater than a concentration at which the purine derivative is dispersible within said composition, wherein said purine derivative is a theophylline derivative of the structural formula:



wherein R is hydrocarbon chain of from 1 to 5 carbon atoms and having one or more hydroxy substituents; and

coating said composition onto a plate base in order to lay down a thin layer of stabilized photosensitive diazonium resin.

4,499,171

POSITIVE TYPE PHOTOSENSITIVE RESIN COMPOSITION WITH AT LEAST TWO O-QUINONE DIAZIDES

Yoshihiro Hosaka; Yoichi Kamoshida, both of Yokohama; Yoshiyuki Harita, Kawasaki, and Kunihiro Harada, Machida, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

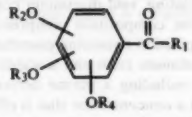
Filed Apr. 12, 1983, Ser. No. 484,312

Claims priority, application Japan, Apr. 20, 1982, 57-65759; Mar. 11, 1983, 58-40478

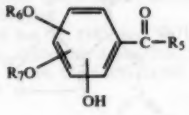
Int. Cl.³ G03C *1/60*; G03F *7/26*

U.S. Cl. 430—192 **18 Claims**

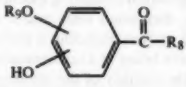
1. A positive type photosensitive resin composition comprising in admixture an alkali-soluble novolac resin and (A) a photosensitive compound represented by the formula (I):



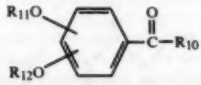
wherein R_1 represents an alkyl group, an aryl group or an aralkyl group, and R_2, R_3 and R_4, which are identical or different, represent 1,2-naphthoquinonediazide-4-sulfonyl groups, 1,2-naphthoquinonediazide-5-sulfonyl groups or 1,2-benzoquinonediazide-4-sulfonyl groups, and a photosensitive compound represented by the formula (II):



wherein R_5 represents an alkyl group, an aryl group or an aralkyl group, and R_6 and R_7, which are identical or different, represent 1,2-naphthoquinonediazide-4-sulfonyl groups, 1,2-naphthoquinonediazide-5-sulfonly groups or 1,2-benzoquinonediazide-4-sulfonyl groups, or (B) a photosensitive compound represented by the formula (III):



wherein R_8 represents an alkyl group, an aryl group or an aralkyl group and R_9 represents a 1,2-naphthoquinonediazide-4-sulfonyl group, a 1,2-naphthoquinonediazide-5-sulfonyl group or a 1,2-benzoquinonediazide-4-sulfonyl group, and a photosensitive compound represented by the formula (IV):



wherein R_{10} represents an alkyl group, an aryl group or an aralkyl group, and R_{11} and R_{12} which are identical or different, represent 1,2-naphthoquinonediazide-4-sulfonyl groups, 1,2-naphthoquinonediazide-5-sulfonyl groups or 1,2-benzoquinonediazide-4-sulfonyl groups, the proportion of the component (A) with the compound (I) and the compound (II) in admixture, or the component (B) with the compound (III) and the compound (IV) in admixture, being 5 to 100 parts by weight per 100 parts by weight of the alkali-soluble novolac resin, the molar ratio of the compound represented by the formula (I) to the compound represented by the formula (II) in the compound (A) being 6:4 to 9:1 and the molar ratio of the compound represented by the formula (III) to the compound represented by the formula (IV) in the component (B) being 2:8 to 7:3, and wherein said compounds having the formulas (I) to (IV) are used in an amount sufficient to produce a resin composition having both excellent sensitivity and yield of residual film thickness.

4,499,172

HEAT-DEVELOPABLE COLOR LIGHT-SENSITIVE MATERIAL WITH ALKYL CARBOXYLIC ACID BASE PRECURSOR CONTAINING TRIPLE BOND

Hiroyuki Hirai, and Kozo Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 30, 1984, Ser. No. 595,149

Claims priority, application Japan, Mar. 31, 1983, 58-55693

Int. Cl.³ G03C *1/40, 5/54, 1/06*

U.S. Cl. 430—203 **14 Claims**

12. A method of forming a color image comprising imagewise exposing a heat-developable color light-sensitive material comprising a support having thereon at least a light-sensitive silver halide, a binder, a dye releasing redox compound which is capable of reducing the light-sensitive silver halide and is capable of reacting with the light-sensitive silver halide by heating to release a hydrophilic dye and a salt of an alkylcarboxylic acid having a triple bond between the α-position carbon atom and the β-position carbon atom with an organic base and heating the exposed light-sensitive material under a condition substantially free from water to imagewise release a mobile dye.

14. A method of forming a color image as claimed in claim **12**, wherein the mobile dye released is then transferred into a dye fixing layer.

4,499,173

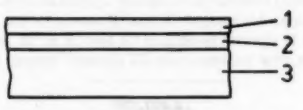
PHOTOGRAPHIC MATERIAL FOR USE IN PHOTOLITHOGRAPHY

Ivan T. Konstantinov; Borislav D. Mednikarov; Maria A. Sahatchieva, and Atanas T. Burov, all of Sofia, Bulgaria, assignors to Zlafop pri Ban, Sofia, Bulgaria

Continuation-in-part of Ser. No. 240,988, Mar. 5, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 491,814

Int. Cl.³ G03C *1/50, 1/72, 1/94*; G03F *7/02*

U.S. Cl. 430—278 **18 Claims**



1. A photographic material for use in photolithography, which material is capable of yielding, on imagewise exposure to radiation, a latent positive image, which material comprises

(1) a carrier base;

(2) a thin homogenous or emulsion photosensitive layer consisting essentially of at least one inorganic photosensitive substance selected from sulphides, selenides and tellurides of phosphorus, arsenic, germanium and metals, and an organic compound disposed in or on said photosensitive layer, said organic compound being selected from dyestuffs having the capacity for dyeing tannined cotton, dyestuffs having the capacity for dyeing synthetic fibres, compounds capable of acting as accelerators, antioxidants or age resistors in the vulcanization of elastomers, and developing agents effective in the development of silver halide-based photographic materials; and

(3) a single elemental metal layer, which layer is in intimate contact with the photosensitive layer and constitutes the said carrier base or is a layer deposited on the said carrier

base before formation of the photosensitive layer, the metal being unreactive with the said photosensitive substance in the photosensitive layer when the latter is exposed to radition;

and whereby the said photosensitive substance thus disposed in the photosensitive layer has a photoselective capacity such that when treated with an alkaline developer imagewise exposed portions thereof are dissolved to the exclusion of unexposed portions thereof.

4,499,174

HYDROPHILIC LAYERS ADJACENT A STRIPPING LAYER FOR DIFFUSION TRANSFER ASSEMBLAGES

John F. Bishop, Rochester, and Thomas O. Braun, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 497,472, May 23, 1983, abandoned. This application Mar. 26, 1984, Ser. No. 592,766

Int. Cl.³ G03C *1/40, 5/54, 11/12*

U.S. Cl. 430—215 **34 Claims**

1. In a photographic assemblage comprising:

(a) a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer;

(b) an image-receiving layer; and

(c) a stripping layer located between said silver halide emulsion layer and said image-receiving layer so that said image-receiving layer may be separated, after processing, from the portion of said assemblage containing said silver halide emulsion layer;

the improvement wherein each side of said stripping layer has a hydrophilic layer immediately adjacent thereto, other than a photosensitive silver halide emulsion layer or an image-receiving layer, and only one of said hydrophilic layers contains particulate material substantially insensitive to light and in a volume percentage of from about 5 to about 75 percent of the hydrophilic material-particulate material mixture in that layer, so that upon separation, substantially all of said stripping layer will remain with the portion of said assemblage having said hydrophilic layer containing said particulate material.

4,499,175

PHOTOPOLYMERIZABLE MATERIALS FOR USE IN PRODUCING SCREEN PRINTING STENCILS

John R. Curtis, Salisbury, and John D. Renwick, Ramsgate, both of England, assignors to Sericol Group Limited, London, England

Filed Sep. 22, 1982, Ser. No. 421,270

Claims priority, application United Kingdom, Nov. 3, 1981, 8133096

Int. Cl.³ G03C *7/12, 1/70;* **G03F** *5/00*

U.S. Cl. 430—253 **22 Claims**

1. In a method for producing a stencil for screen printing by forming a layer of an aqueous photopolymerizable composition, drying the said layer, irradiating the dried layer with actinic light in image-wise manner to form an insolubilzed image in the said layer and developing the said insolubilized image by washing out unirradiated portions of the said layer, the said layer being formed directly on the printing screen or on a support sheet and then transferred to the printing screen before or after the said development, the improvement which consists in forming the said layer from an aqueous photopolymerizable composition in the form of a dispersion, in an aqueous solution of a colloid, of a solution of a prepolymer containing terminal ethylenic unsaturation joined to the residue of an aromatic polyester, epoxy or urethane prepolymer via ester, amide or urethane linkages, the said composition containing also a photoinitiator, whereby the insolubilized image may be developed by washing out unirradiated portions of the said layer with water.

21. A screen for screen printing coated with an aqueous photopolymerisable composition in the form of a dispersion, in an aqueous solution of a colloid, of a solution of a prepolymer containing terminal ethylenic unsaturation joined to the residue of an aromatic polyester, epoxy or urethane prepolymer via ester, amide or urethane linkages, the said composition containing also a photo-initiator, and dried.

4,499,176

PHOTOPOLYMERIZABLE COMPOSITION FOR PRODUCING SCREEN PRINTING STENCILS

John R. Curtis, Salisbury, and John D. Renwick, Ramsgate, both of England, assignors to Sericol Group Limited, London, England

Filed Sep. 22, 1982, Ser. No. 421,271

Claims priority, application United Kingdom, Nov. 3, 1981, 8133095

Int. Cl.³ G03C *7/12, 1/71*

U.S. Cl. 430—253 **17 Claims**

1. An aqueous photopolymerizable composition comprising 5 to 40% by weight of the composition of a monomer containing terminal ethylenic unsaturation, 0.5 to 8% by weight of the composition of a water-insoluble photoinitiator, 0.1 to 8% by weight of the composition of an organic compound containing a tertiary amino group as accelerator, and 4 to 7% by weight of a water-soluble colloid in a liquid medium comprising 1 to 40% by weight of the composition of water and 25 to 65% by weight of the composition of a water-miscible organic solvent or mixture thereof which dissolves the monomer the accelerator and the photo-initiator and does not cause precipitation of the colloid.

4,499,177

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Franciscus A. Vollenbroek, and Elisabeth J. Spiertz, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,611

Claims priority, application Netherlands, Sep. 10, 1982, 8203521

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—311 **9 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of

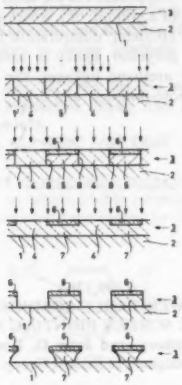
forming a photoresist lacquer layer on a substrate surface, said lacquer layer including a polymeric material and a sensitizer having a diazo group and a ketone group,

exposing said lacquer layer to patterning irradiation,

subjecting the entire area of said lacquer layer to an intermediate treatment, said intermediate treatment including a first irradiation of said lacquer layer to form a bond between said sensitizer and said polymeric material, and a second irradiation of said lacquer layer to convert at least

a part of said sensitizer into an acid in parts of said lacquer layer lying below the top layer, and

developing said lacquer layer in a lye solution,



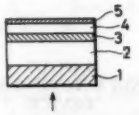
wherein said intermediate treatment causes differences in solubility in lye in the direction of thickness in unexposed parts of said lacquer layer.

4,499,178

OPTICAL INFORMATION RECORDING MATERIAL

Minoru Wada; Yonosuke Takahashi, and Eiichi Hasegawa, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 14, 1982, Ser. No. 388,336
Claims priority, application Japan, Jun. 12, 1981, 56-90378
Int. Cl.³ G03C *5/04;* G03F *7/00*
U.S. Cl. 430—495 **18 Claims**



1. An optical information recording material which comprises a substrate having thereon a heat mode recording layer made of a metal and a metal compound that increases the sensitivity of said recording layer and decreases the reflectivity of said recording layer, the metal compound being selected from the group consisting of CrS, Cr_2S, Cr_2S_3, MoS_2, MnS, FeS, FeS_2, CoS, Co_2S_3, NiS, Ni_2S, PdS, Cu_2S, Ag_2S, In_2S_3, InS, GeSx ($1 \leqq x \leqq 2$), SnS, SnS_2, PbS, As_2S_3, Sb_2S_3, Bi_2S_3, MgF_2, CaF_2, RhF_3, MoO, InO, In_2O_3, GeO, PbO, SnO, and SnO_2, the metal being selected from the group consisting of Mg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Re, Fe, Co, Ni, Ru, Rh, Pd, Ir, Pt, Cu, Ag, Au, Zn, Cd, Al, Ga, In, Si, Ge, Sn, As, Sb, Bi, Se, Te, mixtures thereof, and alloys thereof, a reflecting layer made of a metal wherein the metal used in said reflecting layer is a metal which can be used in said recording layer, and a heat insulating layer interposed between said recording layer and said reflecting layer.

4,499,179

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hideo Ota, and Kiyotoshi Yamashita, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,398
Claims priority, application Japan, Feb. 25, 1982, 57-30393
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—523 **18 Claims**

1. A silver halide photographic light-sensitive element having on a support thereof, at least one silver halide light-sensitive emulsion layer, said at least one emulsion layer having thereon a protective layer composed of a binder containing a non-light-sensitive hydrophilic colloid, said protective layer comprising an outer layer and an inner layer between said outer layer and said at least one emulsion layer, said outer layer consisting essentially of oil particles in the form of water-insoluble liquid droplets finely dispersed in said binder at a volume of 0.1 to 0.4 based on the volume of the binder, said inner layer consisting essentially of fine solid particles selected from the group consisting of a copolymer of an ester of acrylic acid or of methacrylic acid, cellulose acetate propionate, polystyrene, silver halide, strontium sulfate, barium sulfate, calcium carbonate, SiO_2, ZnO, TiO_2, Al_2O_3, MgO, and BaO wherein the ratio of the thickness of the inner layer to the outer layer at least 1.5.

4,499,180

HEAT-DEVELOPABLE COLOR PHOTOGRAPHIC MATERIALS WITH BASE PRECURSOR

Hiroyuki Hirai, and Ken Kawata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 27, 1984, Ser. No. 583,913
Claims priority, application Japan, Feb. 25, 1983, 58-31614
Int. Cl.³ G03C *5/54, 1/40, 1/06*
U.S. Cl. 430—559 **4 Claims**

1. A heat-developable color photographic material, comprising:

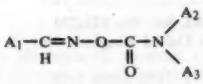
a support base having thereon:

a binder having dispersed therein;

a light-sensitive silver halide;

a dye releasing redox compound which reduces the light-sensitive silver halide and releases a hydrophilic dye by reacting with the light-sensitive silver halide by heating; and

a base precursor represented by the following general formula:



wherein A_1 represents a substituent selected from an alkyl group, a substituted alkyl group, a cycloalkyl group, an alkenyl group, and aralkyl group, an aryl group, a substitued aryl group, an acyl group and a heterocyclic group, A_2 and A_3 represent each a substituent selected from a hydrogen atom, an alkyl group, a substituted alkyl group, a cycloalkyl group, and an aralkyl group, and A_2 and A_3 may form a ring by linking together or

may form an imino group by a double bond.

4,499,181

PHOTOGRAPHIC RECORDING MATERIAL WITH INDOLE REDOX RELEASER

Kazumasa Watanabe, Tokyo; Hidetaka Deguchi, Tama, and Shunji Suginaka, Tokyo, all of Japan, assignors to Konishiroku Photo Ind., Co., Ltd., Tokyo, Japan

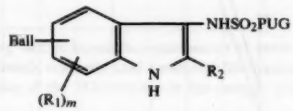
Continuation of Ser. No. 322,709, Nov. 18, 1981, abandoned. This application Jun. 2, 1983, Ser. No. 500,406

Claims priority, application Japan, Nov. 18, 1980, 55-162940

Int. Cl.³ G03C *5/54, 1/40, 1/10, 1/42*

U.S. Cl. 430—558 **8 Claims**

1. A photographic recording material which comprises, on a support, a silver emulsion halide layer and a photographic layer comprising an indole compound represented by the general formula (I):



wherein PUG represents a photographically useful group, Ball represents an organic group which has enough molecular weight and/or disposition to render the compound non-diffusible during processing of said photographic recording material with an alkaline medium and wherein said Ball contains a nitrogen atom which is directly attached to the 5th or 6th position an the iodole ring of said indole compound, said Ball being a succinimide group or a phthalimide group, R_1 represents a halogen atom or a monovalent organic group, R_2 represents a hydrogen atom or a low molecular group attached, through a carbon atom, to the 2nd position of the indole ring and m represents an integer of zero to 3.

8. A photographic recording material according to claim 1, wherein said PUG is selected from a group consisting of silver-complex forming agents, silver halide-solving agent, hardeners, fogging agents, anti-foggants, developers, development inhibitors development accelerators, bleach restrainers, bleach accelerators, dyes and dye precursors.

4,499,182

IN SITU FILM HARDENING WITH PYRIDINIUM CHLOROCHROMATE AND ALDEHYDE PRECURSOR ALCOHOL

Reginald A. Booker, New Castle, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 11, 1983, Ser. No. 540,774

Int. Cl.³ G03C *1/30*

U.S. Cl. 430—621 **6 Claims**

1. A process of forming a hardened photographic film in which a gelatino-silver halide emulsion is coated on a support and subsequently dried characterized in that an aldehyde hardening agent is formed in situ by reacting an aldehyde precursor alcohol and pyridinium chlorochromate, both being initially present in one or more layers of the film.

4,499,183

DETECTING INTRACELLULAR ANTIGENS IN SWELLED AND FIXED CELLS WITH LABELED ANTIBODY

Daniel J. Sujansky, Manville, and Martha W. Rancourt, Piscataway, both of N.J., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Filed Dec. 21, 1982, Ser. No. 451,675

Int. Cl.³ G01N *33/54, 33/50*

U.S. Cl. 435—6 **24 Claims**

1. A method of detecting intracellular antigens selected from the group consisting of hormones, enzymes, DNA, RNA, immunoglobulins, drugs, and organelle associated antigens in whole cells comprising the steps of contacting the cells with a hypotonic solution whereby the cells swell in size but step; fixing the cells whereby the cell membranes are rigidized and water is removed; hydrating and reacting the cells under conditions permitting immunological reactions with specific for the antigen to be detected and having a detectable label; washing to remove antibodies which have not reacted with the antigen to be detected; and detecting the presence of said label whereby the absence or presence of the antigen to be detected may be determined.

12. A reagent test kit for determining the presence of intracellular TdT by detecting an antibody associated label comprising in separate containers:

(a) first antibody specific for TdT;

(b) FITC labeled second antibody specific for the first antibody; and

(c) swelling solution having a hypotonicity adjusted to swell the cells but not substantially lyse the cells prior to completion of the label detecting step of the test.

4,499,184

ANALYSIS FOR TOTAL CHOLESTEROL USING LECITHIN:CHOLESTEROL ACYL TRANSFERASE (LCAT)

Charles T. Goodhue, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,849

Int. Cl.³ C12Q *1/60, 1/48*

U.S. Cl. 435—11 **28 Claims**

1. A method for determining total cholesterol in an aqueous fluid containing cholesterol esters and free cholesterol comprising:

(a) contacting a sample of said fluid with sufficient amounts of lysolecithin and an enzyme exhibiting lecithin:cholesterol acyl transferase (LCAT) activity to convert substantially all the cholesterol esters in said sample to cholesterol,

(b) removing cholesterol from said sample other than by conversion to cholesterol esters, and

(c) measuring the amount of said removed cholesterol.

4,499,185

TEST FOR ESTERASE ACTIVITY IN A LIQUID SAMPLE

A. Christopher Skjold; Lonnie R. Stover, and Robert W. Trimmer, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 17, 1982, Ser. No. 378,895

Int. Cl.³ C12Q *1/44, 1/46, 1/42*

U.S. Cl. 435—19 **15 Claims**

1. A composition for determining the presence of esterase activity in a liquid test sample said composition comprising a chromogenic ester having the formula

R—O—R′

in which R is a moiety which produces a detectable response when the ester is cleaved through an esterase or esterase-like esterolytic reaction, and in which R′ is an amino acid or peptide moiety having a nitrogen protective group, and

3-quinuclidinol.

4,499,186

DIAGNOSING AUTOIMMUNE RHEUMATOID ARTHRITIS BY MEASURING PROTEOLYTIC ACTIVITY OF α_2-MACROGLOBULIN

Marius C. Teodorescu, Westchester; Alexander M. Gaspar, Chicago; Gregory T. Spear, Forest Park; Doina Ganea, Elmhurst, and John L. Skosey, Chicago, all of Ill., assignors to University of Illinois, Board of Trustees, Urbana, Ill.

Filed Dec. 30, 1982, Ser. No. 454,788

Int. Cl.[3] **G01N** *33/52, 33/68, 33/50*

U.S. Cl. 435—23 **21 Claims**

1. A method for diagnosing rheumatoid arthritis and related autoimmune diseases in a patient, comprising the steps of:

(a) collecting a sample of patient's blood in the presence of a stoichiometric excess of a calcium-ion blocking reagent, to provide a representative portion of α_2-macroglobulin in plasma;

(b) mixing the α_2-macroglobulin with a buffered hydrolyzable substrate;

(c) incubating the mixture; and

(d) determining the degree of hydrolysis of the substrate during incubation.

19. A diagnostic kit, for assay of esterolytic activity of chromogenic substrates in the presence of α_2-macroglobulin, as a determinant for rheumatoid arthritis in a subject patient, comprising:

(a) packaged sodium citrate solution, for receiving blood containing α_2-macroglobulin;

(b) separately packaged hydrolyzable chromogenic substrate, containing arginine at the point of enzymatic attack, for reaction with α_2-macroglobulin; and

(c) separately packaged cuvettes, containing buffer solution and adapted for incubation and use in analysis.

4,499,187

METHOD FOR EVALUATING MUTAGENICITY

Gary R. Blackburn, Washington Crossing, Pa.; Carl R. Mackerer, Pennington, N.J., and Ceinwen A. Schreiner, Newtown, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,361

Int. Cl.[3] **C12Q** *1/04, 1/29*

U.S. Cl. 435—34 **11 Claims**

1. A method for evaluating the potenial carcinogenic activity of a hydrocarbon mixture, which method comprises:

extracting the hydrocarbon mixture with a solvent effective for removing mutagenic compounds from said mixture;

subjecting an inoculum of a histidine deficient mutant strain of *Salmonella typhimurium* to incubation in the presence of a sample of said extract and, as metabolic activator, an optimal amount of induced liver homogenate; and

determining the revertant colonies so produced.

4,499,188

BACTERIAL PRODUCTION OF HETEROLOGOUS POLYPEPTIDES UNDER THE CONTROL OF A REPRESSIBLE PROMOTER-OPERATOR

Michael W. Konrad, Alameda, and David F. Mark, Hercules, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Filed May 5, 1982, Ser. No. 375,098

Int. Cl.[3] **C12P** *21/02, 21/00;* **C12N** *15/00*

U.S. Cl. 435—70 **10 Claims**

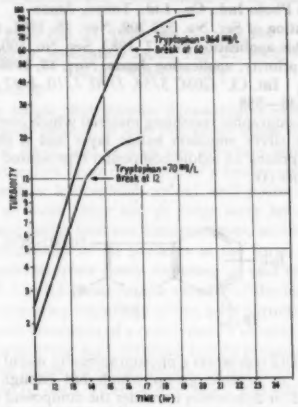
1. A process for bacterially producing a heterologous polypeptide comprising cultivating bacteria transformed to express said heterologous polypeptide under the control of a bacterial promoteroperator that

(i) normally controls the expression of the structural genes that encode the polypeptides of a biosynthetic pathway that produces a product that is used by the bacteria in growth,

(ii) is repressed by said product through activation of a repressor molecule by said product, and

(iii) provides efficient expression of the structural genes under its control when derepressed

in a volume of a culture medium containing an excess of essential nutrients and a predetermined amount of said product that



corresponds approximately to the amount of said product contained in the bacteria in said volume at a predetermined, elevated cellular density for a time sufficient to permit growth of the bacteria to the predetermined cellular density and expression of the heterologous polypeptide thereafter.

4,499,189

BACTERIA CARRYING PLASMID HAVING TEMPERATURE DEPENDENT PLASMID COPY NUMBER

Bernt E. Uhlin; Kurt Nordström, and Soeren Molin, all of Odense, Denmark, assignors to A/S Alfred Benzon, Copenhagen, Denmark

Division of Ser. No. 908,108, May 22, 1978,. This application Dec. 8, 1980, Ser. No. 214,424

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759053

Int. Cl.[3] **C12N** *1/20, 15/00*

U.S. Cl. 435—253 **5 Claims**

1. A bacterium carrying a recombined DNA plasmid showing a controlled constant plasmid copy number when the bacterium is cultivated at one temperature, and showing, when the bacterium is grown at a different temperature, an altered plasmid copy number control allowing an at least 20 times higher or totally uncontrolled copy number.

4,499,190

METHOD OF DETECTING SULFUR DIOXIDE

Leonard D. Spicer, Salt Lake City, Utah; Dennis W. Bennett, Clemson, S.C., and Jon F. Davis, Salt Lake City, Utah, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 273,174, Jun. 12, 1981, abandoned. This application May 9, 1983, Ser. No. 490,551

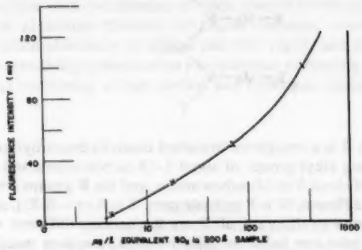
Int. Cl.[3] **C07F** *7/10;* **G01N** *21/64, 21/77, 24/08*

U.S. Cl. 436—122 **12 Claims**

1. A method of analyzing the SO_2 content in a sample of gas comprising:

pumping a known volume of the gas through a known volume of $((CH_3)_3Si)_2NH$, to react any SO_2 in the gas with the $((CH_3)_3Si)_2NH$ to form the compounds $(CH_3)_3SiNSO$ and $[NH_4][(CH_3)_3SiOSO_2]$,

exciting at least one of the compounds so formed to induce fluorescence; and



measuring said induced fluorescence of at least one of said compounds whereby said measured fluorescence is determinative of the SO_2 content in the sample of gas.

4,499,191

METHOD AND APPARATUS FOR THE DECOMPOSITION OF SPECIMENS OF SOLID ORGANIC SUBSTANCES

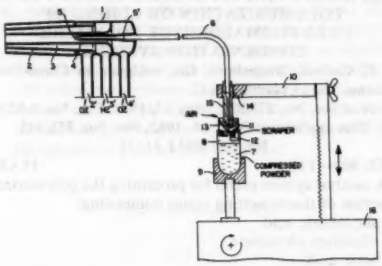
Rolf Brüning, Bruchköbel, and Jürgen Roth, Maintal, both of Fed. Rep. of Germany, assignors to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,201

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118876

Int. Cl.³ G01N *31/12*

U.S. Cl. 436—160 **10 Claims**



1. A method for the decomposition of specimens of solid organic substances in an injector burner (1) consisting of a plurality of annularly interspaced concentric tube (2,3,4 and 5), wherein the substance to be incinerated is introduced into the center tube (5), said method comprising,

forming a powdered specimen (7) with a particle size of less than 75 microns from the solid organic substance,

placing the powdered specimen (7) into a specimen container (8), compressing the specimen (7) and

continuously abrading the specimen (7) to yield solid material in the form of fine dust from the surface of the specimen (7), the abraded material being continuously drawn into the burner (1) through a flexible tube (6) joining the specimen container (8) and the center tube (5) of the burner (1).

4,499,192

SILICON NITRIDE SINTERED PRODUCTS HAVING HIGH CORROSION RESISTANCE AND PROCESS FOR PRODUCTION THEREOF

Toru Shimamori; Yoshinori Hattori, and Yasushi Matsuo, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Nov. 24, 1982, Ser. No. 444,119

Claims priority, application Japan, Nov. 30, 1981, 56-192451

Int. Cl.³ C04B *35/58*

U.S. Cl. 501—97 **1 Claim**

1. A silicon nitride sintered product having high corrosion resistance consisting essentially of from 75 to 97.9% by weight of silicon nitride, from 2 to 20% by weight of yttrium oxide and cerium oxide in a molar ratio of cerium oxide to yttrium oxide of from 0.4/1 to 4/1, and from 0.1 to 8% by weight of aluminum oxide.

4,499,193

PROCESS FOR PRODUCING BETA'-SILICON ALUMINUM OXYNITRIDE (B'-SIALON) USING DISCRETE PARTICLES

Frankie E. Phelps, Lower Burrell; Thomas L. Francis, Murrysville, and Alfred F. LaCamera, Level Green, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 16, 1982, Ser. No. 450,336

Int. Cl.³ C04B *35/56*

U.S. Cl. 501—98 **8 Claims**

1. A process for producing an essentially beta'-SiAlON refractory material, the process comprising providing initial reactants of SiO_2, Al_2O_3 and C in discrete particle form.

4,499,194

CARRIER FOR OLEFIN POLYMERIZATION CATALYSTS AND PROCESS FOR PRODUCING THE SAME

Masato Harada, Kisarazushi; Makoto Iijima, and Noriaki Saitoh, both of Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Dec. 22, 1983, Ser. No. 564,307

Claims priority, application Japan, Jan. 20, 1983, 58-7849

Int. Cl.³ B01J *27/08, 35/08*

U.S. Cl. 502—8 **6 Claims**

1. A carrier for olefin polymerization catalysts obtained by:

reacting an anhydrous magnesium dihalide with at least one compound selected from the group consisting of alcohols and phenols in an inert organic solvent to obtain a complex compound;

suspending this complex compound with vigorous stirring in the presence of a nonionic surfactant in an inert organic solvent at a temperature of the melting point of the complex compound or higher; and

adding an organoaluminum compound or a silicon halide to the suspension to react it at 90°–150° C. with the suspension to thereby form spherical solids.

4,499,195

THERMALLY STABLE MIXED OXIDE GELS

Kenneth S. Wheelock, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 23, 1982, Ser. No. 452,839

Int. Cl.³ B01J *21/16*

U.S. Cl. 502—63 **7 Claims**

1. A process for the preparation of an oxide co-gel of high surface area suitable for use as a catalyst support or catalyst at elevated temperatures without significant loss of surface area which comprises

forming a co-gel consisting of a smectite and an oxide selected from titanium oxide, zirconium oxide, hafnium oxide, thorium oxide, uranium oxide, silicon oxide, and aluminum oxide.

4,499,196

ADSORBING DEACIDIFIER FOR OILY SUBSTANCES

Etsuji Yuki, 1454 Yano-cho, Akiku, Hiroshima-shi, Hiroshima-pref, Japan

Filed Apr. 7, 1983, Ser. No. 482,778
Claims priority, application Japan, May 4, 1982, 57-74987
Int. Cl.³ B01J 29/06, 20/14
U.S. Cl. 502—64 3 Claims

1. An adsorbing deacidifier for use in oily substances, comprising natural or synthetic zeolites in powder form and an aqueous solution of sodium hydroxide or potassium hydroxide adsorbed and fixed in said zeolites; wherein said adsorbing deacidifier has a ratio of water ranging from 10 to 40 weight percent.

3. An adsorbing deacidifier for use in oily substances, comprising natural or synthetic zeolites in powder form and an aqueous solution of sodium hydroxide or potassium hydroxide adsorbed and fixed in said zeolites; wherein said adsorbing deacidifier has water in a ratio of 10 to 40 weight percent in said deacidifier thus prepared; and wherein further is added diatomaceous earth at any desired ratio.

4,499,197

CO-GEL CATALYST MANUFACTURE

Mark A. Seese, Ellicott City, Md., and Robert L. Chiang, Anaheim, Calif., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 24, 1982, Ser. No. 361,426
Int. Cl.³ B01J 21/12, 29/08
U.S. Cl. 502—65 15 Claims

1. A method for preparing hydrogels which comprises:

(a) reacting sodium aluminate and sodium silicate solutions under conditions of intense mixing to obtain a partially gelled reaction mixture having a pH of from about 12 to 12.5;

(b) reacting the partially gelled reaction mixture with an acidic salt solution selected from the group consisting of aluminum and rare earth salts and mixtures thereof to obtain a cogelled reaction mixture having a pH of from about 9 to 10, said reaction being conducted under conditions of complete mixing;

(c) aging the gelled reaction mixture to develop a desired pore structure; and

(d) recovering the aged cogel.

8. A silica-alumina-rare earth oxide tergel which consists essentially of from about 10 to 90 parts by weight SiO_2, 10 to 90 parts by weight Al_2O_3, and 0.5 to 20 parts by weight RE_2O_3, said tergel being characterized by a surface area of about 100 to 400 m^2/g, and by about 30 to 60 percent of the surface area in pores having a diameter of about 40 to 100 Å as determined after steam treatment at 1350° F. for 8 hours.

11. A hydrocarbon conversion catalyst which comprises the tergel of claim 8.

13. The catalyst of claim 11 or 12 which contains a crystalline zeolite

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4,499,198

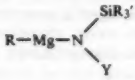
POLYMERIZATION CATALYSTS AND METHODS

Thomas J. Pullukat, Hoffman Estates; Raymond E. Hoff, Palatine, and Michael W. Lynch, Schaumburg, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Oct. 7, 1982, Ser. No. 433,369
Int. Cl.³ C08F 4/64
U.S. Cl. 502—104 24 Claims

13. The method of making an olefin polymerization and interpolymerization catalyst, comprising the step of reacting:

(a) one or more magnesium silylamide compounds represented by the formulas:



(I)

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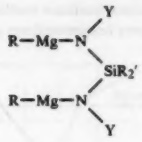


(II)

in which R is a straight or branched chain hydrocarbyl group comprising alkyl groups of about 1–18 carbon atoms and aryl groups of about 6 to 14 carbon atoms, and the R groups are the same or different, R′ is R or hydrogen, Y is R or —SiR'_3, all R′ are the same or different, all Y are the same or different, with

(b) at least one halide or alkoxide of a transition metal selected from Groups IIIB, IVB, VB and VIB of the fourth and fifth periods of the periodic table, and Groups VIIB and VIIIB of the fourth period, and

(c) one or more of a Lewis acid, hydrogen halide or $ZrCl_4$.

4,499,199

$TiCl_4$ TREATED WITH ORGANOMAGNESIUM/PROTONATING AGENT

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1983, Ser. No. 517,110
Int. Cl.³ C08F 4/64
U.S. Cl. 502—104 32 Claims

1. A process comprising:

(a) reacting an organomagnesium compound with a treating compound selected from those of the formula R_3SnOH or of the formula RSH wherein R is a hydrocarbyl group having 1 to 20 carbon atoms to give a catalyst precursor;

(b) thereafter combining said precursor with a titanium tetrahalide in an amount sufficient to give at least one atom of Ti per atom of Sn or S; and

(c) recovering a catalyst.

4,499,200

COMPOUND CATALYST SYSTEM USABLE FOR THE POLYMERIZATION OR CURING OF UREA-FORMALDEHYDE POLYMERIC CONDENSATION SYSTEMS

John E. Carlson, Statesboro, Ga., assignor to Chem-Nuclear Systems, Inc., Columbia, S.C.

Division of Ser. No. 378,871, May 17, 1982, Pat. No. 4,429,075.
This application Nov. 14, 1983, Ser. No. 551,345
Int. Cl.³ B01J 31/26
U.S. Cl. 502—172 11 Claims

1. A catalyst system useful for promoting the polymerization or reaction of thermosetting resins comprising;

(a) phosphoric acid,

(b) trisodium phosphate,

(c) boric acid,

(d) glycerol, and

(e) water.

4,499,201

PROCESS FOR REMOVING ALUMINA OR SILICA SUBSTRATE FROM CARBONACEOUS PYROPOLYMERS

Richard W. Leyerle, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 19, 1983, Ser. No. 496,147
Int. Cl.³ B01J 21/18
U.S. Cl. 502—180 8 Claims

1. A process for the removal of alumina or silica from a composition of matter comprising a carbonaceous pyropolymer possessing recurring units containing at least carbon and hydrogen atoms composited on an alumina or silica substrate,

which process comprises contacting said composition of matter at a temperature of from about 400° C. to about 1000° C. with the vapors of an organic chloride-containing compound reactable with the alumina or silica content of the substrate to form aluminum chloride or silicon chloride, removing the resultant aluminum or silicon chloride vapor, and recovering the remaining carbonaceous pyropolymer possessing recurring units containing at least carbon and hydrogen atoms.

4,499,202

HYDROCRACKING CATALYST

Beatriz Arias, Caracas; Humberto Kum, Los Teques, and Roberto Galiasso, San Antonio de los Altos, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Jun. 29, 1982, Ser. No. 393,500

Int. Cl.³ B01J *21/04, 21/06, 21/88, 27/18*

U.S. Cl. 502—211 **5 Claims**

1. A hydrocracking catalyst in pellet form, having

a surface area of about 90 to about 250 square meters per gram, a pore volume of about 0.25 to about 0.55 cubic centimeters per gram, real density of about 3.00 to about 5.00 grams per cubic centimeter, and apparent density of about 1.50 to about 2.00 grams per cubic centimeter;

containing aluminum in an overall concentration of about 25 to about 35 weight percent;

containing iron in an overall concentration of about 5 to about 15 weight percent;

containing silicon in an overall concentration of about 1 to about 10 weight percent;

containing titanium in an overall concentration of about 0.63 to about 5 weight percent; and

containing a promoter which is a member of the group consisting of molybdenum and phosphorus or mixture thereof, said molybdenum, if present, being present in an overall concentration of about 1 to about 10 weight percent and said phosphorus, if present, being present in an amount of about 1 to about 8 weight percent;

the catalyst pellet surface concentration of said promoter being higher than the overall concentration of said promoter; the atomic ratio of molybdenum to aluminum at the pellet surface being in the range of about 0.03 to about 0.09 when molybdenum is present in the catalyst; and the atomic ratio of phosphorus to aluminum at the pellet surface being in the range of about 0.10 to about 0.60 when phosphorus is present in the catalyst.

4,499,203

SUPPORTED CATALYST OF INCREASED RESISTANCE TO POISONS, USEFUL FOR HYDROTREATING METAL-CONTAINING OIL FRACTIONS

Hervé Toulhoat, Le Pecq; Yves Jacquin, Sevre, and Thierry Dupin, Garges les Gonesses, all of France, assignors to Societe Francaise des Produits pour Catalyse Pro-Catalyse, Rueil-Malmaison, France

Filed Jun. 17, 1983, Ser. No. 505,557

Claims priority, application France, Jun. 17, 1982, 82 10757

Int. Cl.³ B01J *21/04, 23/22, 23/74, 35/02*

U.S. Cl. 502—247 **20 Claims**

1. A catalyst comprising a carrier and at least one catalytic metal or compound of a catalytic metal, said metal or at least one of the metals being vanadium, molybdenum, tungsten, nickel, cobalt or iron, wherein said catalyst consists of a plurality of juxtaposed agglomerates each formed of a plurality of acicular platelets, the platelets of each agglomerate being oriented generally radially with respect to one another and with respect to the center of the agglomerate; wherein said catalyst contains a major proportion of wedge-shaped mesopores, and has an improved resistance to pore mouth plugging compared with bimodal or monomodal porous catalysts.

4,499,204

LEACHED CATALYST FOR AMMONIA SYNTHESIS

Thomas H. Vanderspurt, Stockton; Michael A. Richard, Fanwood, and Angelo A. Montagna, Summit, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 3, 1984, Ser. No. 567,659

Int. Cl.³ B01J *25/00*

U.S. Cl. 502—301 **14 Claims**

1. An improved catalyst formed by leaching a pre-reduced catalyst containing iron and one or more promoters selected from the group consisting of an alkali metal oxide, an alkaline earth metal oxide and aluminum oxide in an aqueous medium with an alkali metal cyanide under oxidative conditions.

4,499,205

HIGH ACTIVITY CATALYST FOR REFORMING OF METHANOL AND PROCESS OF PREPARING SAME

Koji Masuda, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 6, 1983, Ser. No. 482,533

Claims priority, application Japan, Apr. 12, 1982, 57-60512

Int. Cl.³ B01J *23/10, 23/40*

U.S. Cl. 502—303 **11 Claims**

1. A process of preparing a catalyst for reforming a methanol to hydrogen and carbon monoxide, the process comprising the steps of:

(a) depositing at least one metal oxide which is an oxide of a metal selected from the group consisting of Ce, La, Pr, Nd and Y on a carrier which comprises active alumina over at least substantially the entire surface thereof;

(b) impregnating the carrier treated at step (a) with an aqueous solution comprising ammonium thiosulfate and at least one thermally decomposable compound of a catalytic metal of the platinum group;

(c) after step (b), drying the carrier so as to reduce moisture content therein to a predetermined level;

(d) baking the carrier impregnated with said solution in a steam atmosphere at a temperature between about 500° C. and about 600° C. to decompose said thermally decomposable compound adhering to the carrier to thereby deposit at least one catalytic metal of the platinum group on the carrier; and

(e) subjecting the carrier treated at step (d) to a reduction treatment which comprises immersing the carrier in a solution of a reducing agent, such that said catalytic metal deposited on the carrier is rendered substantially completely reduced.

4,499,206

Patent Not Issued For This Number

4,499,207

Patent Not Issued For This Number

4,499,208

ACTIVATED CARBON ADSORBENT WITH INCREASED HEAT CAPACITY AND THE PRODUCTION THEREOF

Andrija Fuderer, Antwerpen, Belgium, assignor to Union Carbide Corporation, Danbury, Conn.

Filed May 13, 1983, Ser. No. 494,547

Int. Cl.[3] B01J *20/08, 20/20, 31/08;* B01D *53/04*

U.S. Cl. 502—415 17 Claims

9. An improved pelletized activated carbon adsorbent comprising:

(1) activated carbon; (2) dense alumina in the form of corundum having a volume-based higher heat capacity than said activated carbon; and (3) a binder present in an amount within the range of from about 0.5 to about 4.0% by weight of said binder based on the total weight of said activated carbon—dense alumina in the form of corundum—binder, said adsorbent being prepared by the process comprising mixing partially activated carbon powder with said dense alumina in a particle size range suitable for mixing therewith prior to pelletization, said dense alumina in the form of corundum comprising from about 1% to about 25% by volume of the total volume of the mixture of activated carbon powder and said dense phase alumina in the form of corundum.

14. The activated carbon adsorbent formulation of claim 9 in which said pellets comprising activated carbon, dense alumina and binder are activated by reaction with steam at elevated temperature.

16. The activated carbon adsorbent formulation of claim 9 and including activated carbon pellets, prepared without the incorporation of said dense alumina in the form of corundum therein, mixed therewith, the activated carbon pellets containing said dense alumina in the form of corundum comprising from about 30 to about 60% of the total heat capacity of said activated carbon pellets.

4,499,209

PROCESS FOR THE PREPARATION OF A FISCHER-TROPSCH CATALYST AND PREPARATION OF HYDROCARBONS FROM SYNGAS

Arend Hoek; Martin F. M. Post; Johannes K. Minderhoud, and Peter W. Lednor, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 28, 1983, Ser. No. 546,670

Claims priority, application Netherlands, Nov. 22, 1982, 8204525

Int. Cl.[3] C07C *1/04*

U.S. Cl. 518—707 13 Claims

1. A process for the preparation of hydrocarbons by catalytic reaction of carbon monoxide with hydrogen, characterized in that a H_2 and CO-containing feed is contacted at a temperature of 125°–350° C. and a pressure of 5–150 bar with a catalyst which contains 5–40 pbw cobalt and 2–150 pbw zirconium or titanium per 100 pbw silica and has been prepared by impregnating a silica carrier once or several times with a solution of a zirconium or titanium compound, calcining the composition thus obtained, impregnating the calcined composition once or several times with a solution of a cobalt compound and calcining and reducing the compositions thus obtained.

4,499,210

PROCESS AND COMPOSITION FOR PRODUCING OPEN-CELL CROSS LINKED POLYOLEFIN FOAM

Akitaka Senuma, and Takao Aizawa, both of Yokohama, Japan, assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 433,869, Oct. 13, 1982, Pat. No. 4,424,181. This application Dec. 15, 1983, Ser. No. 561,658

Int. Cl.[3] C08J *9/06*

U.S. Cl. 521—91 1 Claim

1. A composition suitable for open-cell polyolefin foam which comprises 100 parts by weight of olefin resin, 1 to 20 parts by weight of blowing agent, 0.3 to 10 parts by weight or organic peroxide crosslinking agent, 0.1 to 10 parts by weight of trifunctional monomer, and 1 to 5 parts by weight of silicone oil or a derivative thereof, said organic peroxide having a 10-minute half-value temperature (T_p) of 110° C. to 170° C. and said blowing agent having a decomposition temperature (T_f) of 100° C. to 160° C., T_p and T_f satisfying the following equation:

$$-10° C. \leqq T_p - T_f \leqq 50° C.$$

4,499,211

OPEN-CELL/MICROPOROUS MOLDED ARTICLE

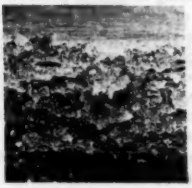
Axel Walch, Frankfurt; Walter Seifried; Wolfgang Michel, Wiesbaden; Jürgen Kuhls, Burghausen, and Jürgen Wildhardt, Huenstetten, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,266

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129745

Int. Cl.[3] C08F *9/28*

U.S. Cl. 521—145 5 Claims



1. A microporous molded article having an open-cell structure and comprising a thermoplastic material which possesses an inherent latent structural convertibility and includes effective pores of a diameter in the range from about 0.002 to 10 μm, said thermoplastic material comprising at least about 70 percent by weight of a terpolymer which is composed of from about 20 to 80 percent by weight, relative to the total weight of the terpolymer, of copolymerized fluorinated olefin selected from the group consisting of ethylene and propylene, up to about 40 percent by weight, relative to the total weight of the terpolymer, of copolymerized olefin selected from the group consisting of ethylene and propylene, and from about 80 to 20 percent by weight, relative to the total weight of the copolymer, of copolymerized vinyl acetate, with at least 5 percent of the total proportion of acetate groups contained in the copolymer being converted by saponification into OH groups after copolymerization of the specified comonomers to form the terpolymer.

4,499,212

THERMOSETTING ACRYLIC LATEXES

Phillip C. Martino, Brunswick, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 416,911, Sep. 13, 1982, abandoned. This application Jan. 30, 1984, Ser. No. 575,224

Int. Cl.[3] C08L *0/00*

U.S. Cl. 523—201 9 Claims

1. In a process for polymerizing ethylenically unsaturated monomers in water to produce self-curing emulsion polymerized polymer particles, the improvement comprising:

polymerizing ethylenically unsaturated monomers in a two-step process by first copolymerizing first stage monomers and then copolymerizing second stage monomers wherein first stage monomers comprise by weight between 30% and 70% of the total monomers, the total monomers comprising by weight (a) between 1% and 20% alkylated alkylol acrylamide, (b) between 1% and 20% functional monomer containing reactive functional groups and selected from carboxyl monomer, hydroxyl monomer,

amine monomer, or amide monomer, and (c) other ethylenic monomer, wherein said first stage monomers are said functional monomer (b) and/or said other ethylenic monomer (c), and said second stage monomers comprise alkylated acrylamide monomer (a) and functional monomer (b) and other ethylenic monomer (c), wherein second stage monomers contain 3% to 15% of said alkylated alkylol acrylamide monomer (a) and is a second stage monomer copolymerized in the second step to preferentially orientate alkylol acrylamide groups of said alkylated alkylol acrylamide monomer on the surface portion of the latex polymer particles, and reacting said second stage monomers at temperatures above about 70° C. to react a minor amount of said alkylated alkylol acrylamide monomer with a minor amount of said functional monomer to provide high molecular weight polymer particles containing surface crosslinked polymer chains to provide a sprayable latex adapted to be heat cured and self cross-linking by cross-linking said alkylated alkylol acrylamide groups with said functional groups.

4,499,213

COAGULATION

Kyosaku Sato, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Sep. 12, 1983, Ser. No. 531,507
Claims priority, application Canada, Oct. 18, 1982, 413647
Int. Cl.[3] C08F 6/00; C08G 0/00; C08J 3/00
U.S. Cl. 523—335 11 Claims

1. An improved process for the coagulation from the latex of a carboxylated styrene-butadiene polymer wherein the latex is added to an agitated aqueous coagulation mixture of sodium chloride and sulphuric acid maintained at a pH of from about 2 to about 4.5 and at a temperature of from about 50° to about 80° C., the improvement being the latex is adjusted to a pH value of from about 6.5 to about 7.5 by the addition of an aqueous solution of an alkali metal hydroxide and an aqueous emulsifier mixture is added to the latex prior to coagulation or simultaneously fed with the latex to the coagulation mixture, the emulsifier mixture being the alkali metal salts of and containing from about 3 to about 6 parts by weight per 100 parts by weight of polymer in the latex of one or more C_{12} to C_{18} fatty acids and from about 1.5 to about 3.5 parts by weight or rosin acid per 100 parts by weight of polymer in the latex, the pH of the emulsifier mixture being adjusted to a value of from about 10 to about 12 by the addition of an aqueous solution of an alkali metal hydroxide.

4,499,214

METHOD OF RAPIDLY DISSOLVING POLYMERS IN WATER

Edwin T. Sortwell, Wheaton, Ill., assignor to Diachem Industries, Inc., Batavia, Ill.

Filed May 3, 1983, Ser. No. 491,070
Int. Cl.[3] C08F 6/24; C08J 3/04, 3/08
U.S. Cl. 523—336 22 Claims

1. A method of rapidly dissolving a water-soluble polymer or gum in water which comprises the steps of:

(a) preparing finely-divided particles of said polymer or gum by comminuting said polymer or gum under substantially non-molecularly destructive conditions;

(b) dispersing said particles in a substantially water-free liquid carrier in which said polymer or gum is substantially insoluble to form a suspension; and,

(c) adding said suspension to water with sufficient mixing to disperse and rapidly dissolve said particles in said water.

4,499,215

MODIFIED ASPHALT-EPOXY RESIN COMPOSITION

Sadashige Okada, 55, Kamiwakicho-2-chome, Nakagawa-ku, Nagoya, Japan

Filed Jul. 28, 1983, Ser. No. 518,070
Claims priority, application Japan, Jun. 3, 1983, 58-98009
Int. Cl.[3] C08L 63/00, 95/00
U.S. Cl. 523—450 7 Claims

1. A modified asphalt/epoxy resin composition which comprises an epoxy resin and a modified asphalt; the modified asphalt being obtainted by condensing, in the presence of an arylsulfonic acid as catalyst, 100 parts by weight of an asphalt with 25 to 45 parts by weight of a non-thermoreactive phenol resin having an average molecular weight of 900–1400 and obtained by condensing a member selected from the group consisting of an alkylphenol having 4 to 8 carbon atoms in the alkyl moiety and phenylphenol with an aldehyde selected from the group consisting of formaldehyde and acetaldehyde;

wherein the ratio of the epoxy resin and the modified asphalt is 30 to 100 parts by weight of the epoxy resin based on 10 parts by weight of the non-thermoreactive phenol resin in the modified asphalt.

5. A process for producing a modified asphalt-epoxy resin composition which comprises mixing an epoxy resin and a modified asphalt; the modified asphalt being obtained by condensing, in the presence of an arylsulfonic acid as catalyst and at a temperature of 160° to 200° C. until evolution of water ceases, 100 parts by weight of an asphalt with 25 to 45 parts by weight of non-thermoreactive phenol resin having an average molecular weight of 900–1400 and obtained by condensing a member selected from the group consisting of an alkylphenol having 4 to 8 carbon atoms in the alkyl moiety and phenylphenol with an aldehyde selected from the group consisting of formaldehyde and actaldehyde;

wherein the ratio of the epoxy resin and the modified asphalt is 30 to 100 parts by weight of the epoxy resin based on 10 parts by weight of the non-thermoreactive phenol resin in the modified asphalt.

4,499,216

METHOD AND RESIN SOLUTION FOR SPLICING CARBONIZED POLYACRYLONITRILE MATERIAL

Raymond G. Spain, Huntington Beach, and James E. Massie, Westminster, both of Calif., assignors to Hitco, Newport Beach, Calif.

Filed Jul. 5, 1983, Ser. No. 510,673
Int. Cl.[3] C08K 5/02; C08L 63/10
U.S. Cl. 523—437 4 Claims

1. A solution for splicing together lengths of carbonized polyacrylonitrile material consisting of an acrylic polymer, an epoxy resin and a solvent, the acrylic polymer consisting of a solid acrylic polymer having a first molecular weight and a liquid acrylic polymer having a second molecular weight substantially less than the first molecular weight, the solution forming a relatively strong and flexible adhesive bond upon curing by heating.

4,499,217

THERMO-SETTING RESINOUS LIQUID COMPOSITIONS

Masaru Yoshimura, and Sumio Saitoh, both of Yokohama, Japan, assignors to Catalysts & Chemicals Industries, Co. Ltd., Tokyo, Japan

Filed Jan. 29, 1982, Ser. No. 343,920
Claims priority, application Japan, Feb. 2, 1981, 56-14165
Int. Cl.[3] C08L 33/00, 63/00, 75/04, 83/00
U.S. Cl. 523—456 2 Claims

1. An essentially water-free liquid composition comprising a composite formed from (a) an essntially water-free dispersion of silica colloid in alcohol, said silica having particle diameter of between about 10 and 50 mμ, and (b) a thermo-setting resin selected from the group consisting of acrylic, acryl-melamine,

acryl-epoxy, acryl-urethane, melamine-alkyd, epoxy, epoxy-phenolic, phenolic and silicone resins.

4,499,218

VULCANIZABLE RUBBER COMPOUND

Genrikh D. Lyakhevich, ulitsa Matusevicha, 3, kv. 146, Minsk; Vasily G. Suzansky, ulitsa Gorkogo, 28, kv. 33, and Vulf P. Kovalerchik, ulitsa Oktyabrskaya, 197, kv. 78, both of Bobruisk, all of U.S.S.R.

Filed Jun. 4, 1981, Ser. No. 270,386

Int. Cl.³ C08L *7/00, 9/00, 9/02;* **C08J** *11/04*

U.S. Cl. 524—79 **11 Claims**

1. Vulcanizable rubber stock based on diene rubber, comprising: oxidized oligomer prepared by thermally decomposing rubber comprising an addition polymer of one or more ethylenically unsaturated monomers by heating said rubber at a temperature above the decomposition temperature thereof for a sufficient time and oxidizing the decomposed rubber, said oxidized oligomer being contained in said rubber stock in an amount of 5–68 parts by weight per 100 parts by weight of diene rubber.

4,499,219

STABILIZED THERMOPLASTIC POLYESTER MOULDING COMPOSITION

Lothar Buxbaum, Villach/Sankt Georgen, Austria; Franz Breitenfellner, Bensheim, and Thomas Kainmüller, Lindenfels, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

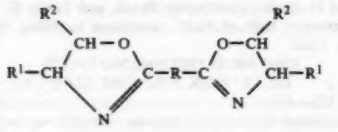
Continuation-in-part of Ser. No. 412,742, Aug. 30, 1982, abandoned. This application Nov. 21, 1983, Ser. No. 554,011

Claims priority, application Switzerland, Sep. 9, 1981, 5822/81

Int. Cl.³ C08K *5/15, 3/34*

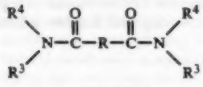
U.S. Cl. 524—94 **15 Claims**

1. A moulding composition, based on a thermoplastic polyester, which comprises effective amounts of (a) as a first stabiliser, a polyepoxide compound, having on average more than one epoxide group per molecule, and (b) at least one second stabiliser selected from the group consisting of the bisoxazolines of the formula I



(I)

and the dicarboxylic acid imides and amides of the formula II



(II)

in which R is alkylene, cycloalkylene, unsubstituted arylene or arylene substituted by halogen, R^1 and R^2 independently of one another are a hydrogen atom, aryl, cycloalkyl or alkyl, R^3 is alkyl, cycloalkyl, or aryl or aralkyl which are unsubstituted or substituted by alkyl or halogen, and R^4 is acyl, or R^3 and R^4 together are a radical of the formula $—C_nH_{2n}CO—$, in which n is a number from 3 to 11, or R^3 and R^4 together are a radical of the formula

in which X is ethylene or ethenylene which are unsubstituted or substituted by alkyl, or is a carbocyclic radical which is unsubstituted or substituted by alkyl or halogen and to which both the carbonyl groups are bonded in the ortho-position.

4,499,220

COPOLYMER LIGHT STABILIZERS HAVING AT LEAST ONE 2,2,6,6-TETRAALKYL PIPERIDYL GROUP AND SYNTHETIC RESIN COMPOSITIONS CONTAINING THE SAME

Motonobu Minagawa, Kosigaya City; Naohiro Kubota, Ageo City, and Toshihiro Shibata, Omiya City, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

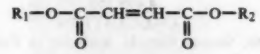
Filed May 20, 1982, Ser. No. 379,847

Claims priority, application Japan, Jul. 3, 1981, 56-104069

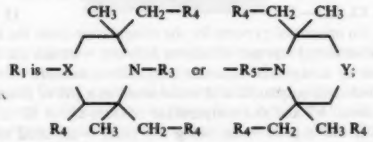
Int. Cl.³ C08K *5/15, 5/45;* **C08F** *8/00, 222/22*

U.S. Cl. 524—102 **32 Claims**

1. Copolymer light stabilizers having at least one 2,2,6,6-tetraalkyl piperidyl group in the molecule and a molecular weight within the range from about 1000 to about 20,000 of a maleic or fumaric acid ester having the formula:

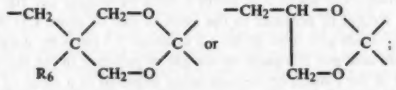


wherein:



R_2 is alkyl having from one to about eighteen carbon atoms or R_1;

X is



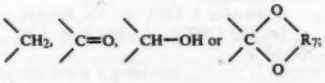
R_6 is lower alkyl or hydroxyalkyl having from one to about four carbon atoms;

R_3 is hydrogen, alkaryl having from seven to ten carbon atoms; or alkyl, hydroxyalkyl or epoxyalkyl having from one to about eighteen carbon atoms;

R_4 is hydrogen or methyl;

R_5 is alkylene having from two to about four carbon atoms;

Y is



and

R_7 is alkylene having from two to about eighteen carbon atoms

with at least one monomer selected from the group consisting of aliphatic carboxylic acid vinyl esters having from two to about eight carbon atoms; alkyl vinyl ethers having from one to about eighteen carbon atoms; triallyl isocyanurate; pinene; and tricyclo(5.2.1.$0^{2,6}$)-decene-3.

4,499,221

POLYURETHANE COMPOSITION IMPROVED IN DYEING PROPERTY

Minoru Saitoh; Yoshikazu Arimatsu; Katsuya Tani, and Hideyuki Mitamura, all of Shiga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed May 31, 1984, Ser. No. 615,647

Claims priority, application Japan, May 31, 1983, 58-97546; Jun. 1, 1983, 58-98686

Int. Cl.³ C08L 75/00

U.S. Cl. 524—109 12 Claims

1. A polyurethane composition which comprises (A) a polyurethane and (B) a tertiary nitrogen atom-containing polymer incorporated therein in an amount sufficient to stabilize the polyurethane (A), said polymer (B) being the reaction product between (C) a tertiary nitrogen atom-containing diol and an excessive amount of (D) an organic diisocyanate, the terminal isocyanate group in said reaction product being blocked with a monoamine and/or a dialkylhydrazine.

4,499,222

PHOSPHORUS-CONTAINING FLAME PROOFING COMPOSITIONS FOR SYNTHETIC MATERIALS

Michel Bernard, Levallois; Daniel Baldé, Paris; Elie Ghenassia, Chocques, and Francois Laumain, Levallois, all of France, assignors to Produits Chimiques Ugine Kuhlmann, France

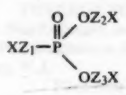
Filed Aug. 15, 1983, Ser. No. 523,640

Claims priority, application France, Aug. 24, 1982, 82 14518

Int. Cl.³ C08K 5/53

U.S. Cl. 524—123 8 Claims

1. Phosphorus-containing mixtures for conferring improved flame retardance to combustible materials, which mixtures have low crystallization temperatures, the mixtures principally containing a plurality of phosphonates having the formula



wherein X is chloro or bromo; Z_1, Z_2, and Z_3 are $—CH_2—CH_2—$ or $—CH_2—CHR—$; and R is CH_3 or CH_2Cl, the overall mole ratio of the $—Z_nX$ groups of the $—CH_2—CH_2—X$ type to the total $—Z_nX$ groups being from 0.02 to 0.90, n being 1, 2, or 3.

4,499,223

HYDROLYZABLE POLYESTER RESINS AND COATING COMPOSITIONS CONTAINING THE SAME

Naoki Yamamori, Osaka; Junji Yokoi, and Motoyoshi Yoshikawa, both of Nara, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 426,155, Sep. 28, 1982,. This application Apr. 23, 1984, Ser. No. 602,722

Int. Cl.³ C08G 63/02

U.S. Cl. 524—176 4 Claims

1. Hydrolyzable polyester resin for an antifouling paint use having at least one metal-ester bondings, the metal being at least one member selected from the Groups Ib, IVa and VIII of the Periodic Table.

4,499,224

UPGRADING SILICONE RESIN COATING COMPOSITIONS

Blair T. Anthony, Schenectady, and Donald G. LeGrand, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 20, 1984, Ser. No. 572,482

Int. Cl.³ C08K 3/36

U.S. Cl. 524—261 9 Claims

1. A method of improving silicone resin coating compositions comprising filtering said silicon resin coating compositions through a filter having a size of 5 microns or less.

6. A silicone resin coating composition obtained by the method comprising filtering a silicone resin coating composition through a filter having a size in the range of 5 to 0.1 microns, said silicone resin coating composition being comprised of from about 10–50 weight percent solids dispersed in a water/alcohol dispersion medium, said solids comprising from about 10–70 weight percent colloidal silica and about 30–90 weight percent of a partial condensate obtained from a trifunctional silane having the formula $R'Si(OR)_3$, wherein R' is selected from the group consisting of alkyl radicals having 1–3 carbon atoms and aryl radicals having from 6–13 carbon atoms and R is selected from a group consisting of alkyl radicals having from 1–13 carbon atoms and aryl radicals having from 6–20 carbon atoms, at least 70% of which is $CH_3Si(OR)_3$.

4,499,225

COATING COMPOSITION

Akira Kubo, Sakura; Akihiko Ishii, Chiba; Ken Nishizaki, Narashino, and Tomoharu Saito, Sakura, all of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki, Japan

Filed Jul. 6, 1983, Ser. No. 511,294

Claims priority, application Japan, Jul. 8, 1982, 57-118915

Int. Cl.³ C08L 91/06

U.S. Cl. 524—276 8 Claims

1. A coating composition consisting essentially of a film-forming component dispersed in water, said film-forming component comprising 60 to 99 wt.% of a powder containing as a main component one or more resins selected from the group consisting of polyethylene, polypropylene and their derivatives and 1 to 40 wt.% of a low molecular weight oxidized polyethylene and/or its derivative.

4,499,226

HIGH CLARITY COLORLESS POLYESTERS

Fred L. Massey, Uniontown, and Douglas D. Callander, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 245,838, Mar. 20, 1981,. This application Dec. 30, 1982, Ser. No. 454,753

Int. Cl.³ C08K 3/32, 5/05, 5/11

U.S. Cl. 524—382 19 Claims

1. A polyester, comprising:

a polyester resin, said polyester resin made solely by adding a dicarboxylic acid to a glycol compound in a molar ratio of said alcohol to said acid of from 1.7:1 to 1.05:1, said dicarboxylic acid selected from the group consisting of alkyl dicarboxylic acids having a total of from 2 to 16 carbon atoms, aryl or alkyl substituted aryl dicarboxylic acids containing a total of from 8 to 16 carbon atoms, and combinations thereof, and wherein said glycol is selected from the group consisting of glycols having from 2 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combinations thereof,

forming a mixture by adding a phosphorus compound, a cobalt compound as well as said alcohol and said acid to a solvent consisting of a preformed molecular weight linear condensation polyester of a glycol and a dicarboxylic acid, said polyester having an average degree of polymerization of from 1.4 to 10, heating and reacting the mixture at a temperature from above the melting temperature of a low molecular weight linear polyester to 300° C. at a pressure of from about 20 to about 1000 pounds per square inch gauge pressure until a linear condensation polyester resin of said glycol and acid having an average degree of polymerization of from 1.4 to 10 is formed, adding a condensation antimony polymerization catalyst and then heating and reacting the mixture at a temperature of from about 260° C. to about 290° C. at a pressure of about ten millimeter of mercury or less until a linear polyester is formed,

said polyester consisting essentially of said antimony compound, said phosphorus compound, and said cobalt compound, the amount of said antimony compound, based upon the amount of elemental antimony therein, ranging from about 70 to about 250 parts by weight per one million parts by weight of said polyester,

the amount of said phosphorus compound, based upon the amount of elemental phosphorus therein, ranging from about 5 to about 60 parts by weight per million parts by weight of said polyester, the amount of said cobalt compound based upon the amount of elemental cobalt therein ranging from about 5 to about 50 parts by weight per million parts by weight of said polyester, the amount of said elemental phosphorus in said phosphorus compound ranging from about 0.35 to about 2.5 parts by weight for each part by weight of elemental cobalt in said cobalt compound, said polyester resin yielding a high clarity, low haze, neutral hue article having a haze value of less than 3.0.

4,499,227

THERMOPLASTIC RESIN COMPOSITION HAVING HIGH IMPACT STRENGTH

Fay W. Bailey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 2, 1983, Ser. No. 557,514
Int. Cl.³ C08K *3/34, 5/09, 5/01, 9/04*
U.S. Cl. 524—399 **22 Claims**

1. A thermoplastic composition consisting essentially of a mixture of:

(a) 100 parts by weight of at least one thermoplastic resin selected from the group consisting of polyethylene, polypropylene, polybutylene, polystyrene, vinyl acetate-ethylene copolymers, butadiene-styrene copolymers, and homo- and copolymers of acrylic acid; and

(b) 5–60 parts by weight of particulate mica filler premixed in the absence of a thermoplastic resin with 0.1–2 parts by weight of at least one ingredient selected from the group of

(i) polybutylenes having a melting point below about 100° F.;

(ii) fatty acid metal salts of the formula:

$$(RCOO)_nM$$

wherein R is an alkyl or alkenyl radical having from 9 to 25 carbon atoms, M is a Group IA, IIA, or IIB metal; and n is the valence of M; and

(iii) mineral oils.

7. A composition according to claim 1 wherein said fatty acid metal salt is zinc stearate.

4,499,228

RUBBER COMPOSITIONS HAVING IMPROVED CRACK GROWTH RESISTANCE

Masaki Ogawa; Yasushi Hirata, both of Sayama, and Akira Tsuchikura, Tokyo, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 507,303
Claims priority, application Japan, Jun. 29, 1982, 57-110742
Int. Cl.³ C08K *3/10*; C08L *9/00, 47/00*
U.S. Cl. 524—413 **4 Claims**

1. A rubber composition having an improved crack growth resistance, characterized by containing 1 to 40% by weight of a granular body having an average particle diameter of 5 to 500 μm, which contains 2 to 40% by weight of micro short fibers having an average diameter of not more than 1 μm, an average length of 1 to 30 μm and an aspect ratio of not less than 8 and orientated in uniaxial or biaxial direction, and being random in the orientation axis of the micro short fiber between these granular bodies.

4,499,229

ONE PACKAGE, STABLE, MOISTURE CURABLE, ALKOXY-TERMINATED ORGANOPOLYSILOXANE COMPOSITIONS

Thomas P. Lockhart, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,527
Int. Cl.³ C08K *3/34*; C08G *77/04, 77/26*
U.S. Cl. 524—450 **7 Claims**

1. A one-package, substantially anhydrous, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a substantially acid-free, tack-free elastomer comprising by weight,

(A) an organopolysiloxane wherein the silicon atom at each polymer chain end is terminated with at least one alkoxy radical,

(B) an effective amount of condensation catalyst,

(C) from 0 to 0.1 part, per part of the alkoxy terminated organopolysiloxane of (A) of a cross-linking polyalkoxysilane of the formula,

$$(R^1O)_{4-b}\overset{(R^2)_b}{\overset{|}{Si}}\ ,$$

(D) 0.001 to 0.1 part, per part of the alkoxy terminated organopolysiloxane of a diorganosulfoxide curing accelerator having the formula,

$$R^3\text{—}\overset{\overset{O}{\|}}{S}\text{—}R^4$$

(E) a stabilizing amount of a scavenger for hydroxy-containing material in the organopolysiloxane RTV composition, selected from

(i) an organic material having at least one alcohol reactive functional groups which is suitable as a scavenger for hydroxy radicals and which has a molecular weight in the range of from about 40 to about 1,000 and consists essentially of a mixture of chemically combined atoms selected from C, H, N, O, P, S, Cl, F, Br and I,

(ii) a silicon containing scavenger having a molecular weight in the range of about 47 to about 5,000 and at least one chemically combined unit of the formula,

$$\equiv Si\text{—}(X)_c, \text{ and}$$

(iii) a zeolite

where R^1 is a $C_{(1-8)}$ aliphatic organic radical selected from alkyl radicals, alkylether radicals, alkylester radicals, alkylketone radicals and alkylcyano or a $C_{(7-13)}$ aralkyl radical, R^2 is a $C_{(1-13)}$ monovalent organic radical selected from R radicals, R^3 and R^4 are the same or different $C_{(1-13)}$ monovalent hydrocarbon radical or substituted monovalent hydrocarbon radical, X is a hydrolyzable leaving group selected from amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido radicals, b is a whole number equal to 0 or 1, c is an integer equal to 0 to 4 inclusive and the remaining valences of Si other than those satisfied by X can be satisfied by atoms selected from Si, C, O, N, P, S, transition elements IIIa, IVa, Va, VIa, VIIa and VIII and mixtures thereof.

4,499,230

ONE PACKAGE, STABLE, MOISTURE CURABLE, ALKOXY-TERMINATED ORGANOPOLYSILOXANE COMPOSITIONS CONTAINING A ZEOLITE

Thomas P. Lockhart, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,529
Int. Cl.³ C08K 3/34; C08G 77/04, 77/06, 77/20
U.S. Cl. 524—450 8 Claims

1. A one-package, substantially anhydrous, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a substantially acid-free, tack-free elastomer comprising,

(A) an organopolysiloxane wherein the silicon atom at each polymer chain end is terminated with at least one alkoxy radical,

(B) an effective amount of condensation catalyst

(C) from 0 to 0.1 part, per part of the alkoxy terminated organopolysiloxane of (A) of a cross-linking polyalkoxysilane

(D) 0 to 0.1 part, per part of the alkoxy terminated organopolysiloxane of an amine accelerator and

(E) a stabilizing amount of a zeolite.

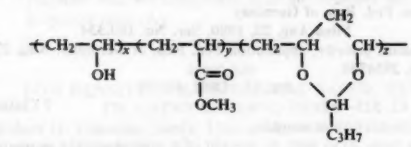
4,499,231

PELLICLE COMPOSITIONS AND PELLICLES THEREOF FOR PROJECTION PRINTING

Irl E. Ward, Easton, and Philip M. Papoojian, Bethlehem, both of Pa., assignors to J. T. Baker Chemical Company, Phillipsburg, N.J.

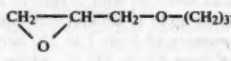
Filed Mar. 22, 1983, Ser. No. 477,754
Int. Cl.³ C08L 83/00
U.S. Cl. 524—506 21 Claims

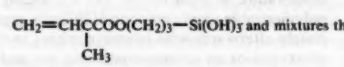
1. A transparent pellicle film for use in projection printing comprising a film formed from a mixture consisting essentially of a polyvinyl butryal resin of the formula



wherein x is ≦0.12, y is ≦0.02 and z is ≧0.88, with a dispersion of colloidal silica in lower aliphatic alcohol-water solution of the partial condensate of silanol, the major portion of the partial condensate obtained by the condensation of $CH_3Si(OH)_3$ and a minor portion being obtained from condensation with a member selected from the group consisting of $C_2H_5Si(OH)_3$; $C_3H_7Si(OH)_3$;

$C_2H_5Si(OH)_3$; $C_3H_7Si(OH)_3$;





4,499,232

WATER SOLUBLE, CROSSLINKABLE POLYMER COMPOSITIONS, THEIR PREPARATION AND USE

Friedrich Engelhardt, Frankfurt; Steffen Piesch, Oberursel; Juliane Balzar, Frankfurt, all of Fed. Rep. of Germany, and Jeffery C. Dawson, Katy, Tex., assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany and Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 399,682, Jul. 19, 1982, , which is a continuation of Ser. No. 216,672, Dec. 15, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 423,026
Int. Cl.³ C08L 33/26, 39/06
U.S. Cl. 524—548 20 Claims

1. In a highly viscous aqueous acid composition comprising an aqueous solution containing 70 to 99.8% by weight of an acid and 0.2 to 30% by weight of a crosslinked polymer composition, wherein the improvement comprises said polymer containing crosslink bridges of the formula —NR^x—CH—=N—CO— wherein R^x represents hydrogen, alkyl having 1 to 4 carbon atoms or —CH_2OH.

4,499,233

WATER DISPERSIBLE, MODIFIED POLYURETHANE AND A THICKENED AQUEOUS COMPOSITION CONTAINING IT

Marvin T. Tetenbaum, Wexford, Pa., and Burlon C. Crowley, Toms River, N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed May 3, 1983, Ser. No. 491,039
Int. Cl.³ C08G 18/50, 18/32, 18/34
U.S. Cl. 524—591 30 Claims

1. A water dispersible modified polyurethane which is the product of a reaction conducted under substantially anhydrous conditions of:

(a) polyisocyanate;

(b) polyether polyol in an amount ranging from about 0.10 to about 10.00 moles per mole of polyisocyanate;

(c) modifying agent in an amount ranging from about 0.015 to about 3.400 moles per mole of polyisocyanate, said modifying agent having the formula

$$X_x—R—Y_y$$

wherein R represents a group containing from 0 to 10 carbon atoms, X is a group containing at least one active hydrogen moiety selected from the group consisting of primary amino, secondary amino, carboxyl and mixtures thereof, Y is a group containing at least one active hydrogen moiety selected from the group consisting of primary amino, secondary amino, carboxyl, hydroxyl, mercapto and mixtures thereof, the sum of (x+y) is an integer greater than 1 and x is at least 1 wherein the modifying agent is composed of less than about 20 mole % of compounds wherein the sum of (x+y) is at least 3 and wherein the polyisocyanate, the polyether polyol and the modifying agent are used to form the polymer chain; and

(d) capping agent which is reactive with the reaction product of the polyisocyanate, the polyether polyol and the modifying agent and which is present in an amount sufficient to cap the reaction product of the polyisocyanate, polyether polyol and the modifying agent.

20. A thickened aqueous composition comprising:

(a) water; and

(b) from about 0.005 to about 10.00% by weight of a water dispersible, modified polyurethane which is the product of a reaction conducted under substantially anhydrous conditions of:

(i) polyisocyanate;

(ii) polyether polyol in an amount ranging from about 0.10 to about 10.00 moles per mole of polyisocyanate;

(iii) modifying agent in an amount ranging from about 0.015 to about 3.400 moles per mole of polyisocyanate, said modifying agent having the formula

$X_x—R—Y_y$

wherein R represents a group containing from 0 to 10 carbon atoms, X is a group containing at least one active hydrogen moiety selected from the group consisting of primary amino, secondary amino, carboxyl and mixtures thereof, Y is a group containing at least one active hydrogen moiety selected from the group consisting of primary amino, secondary amino, carboxyl, hydroxyl, mercapto and mixtures thereof, the sum of (x+y) is an integer greater than 1 and x is at least 1 wherein the modifying agent is composed of less than about 20 mole % of compounds wherein the sum of (x+y) is at least 3 and wherein the polyisocyanate, the polyether polyol and the modifying agent are used to form the polymer chain; and

(iv) capping agent which is reactive with the reaction product of the polyisocyanate, the polyether polyol and the modifying agent and which is present in an amount sufficient to cap the reaction product of the polyisocyanate, the polyether polyol and the modifying agent.

4,499,234

NON-CORROSIVE SILICONE RTV COMPOSITIONS

Sandra L. Pratt, Clifton Park; Gary M. Lucas, Scotia, both of N.Y., and Michio Zembayashi, Ohta, Japan, assignors to General Electric Company, Waterford, N.Y.

Filed Oct. 14, 1983, Ser. No. 542,222

Int. Cl.³ C08K *3/10*

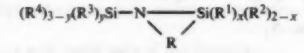
U.S. Cl. 524—783 **36 Claims**

1. A stable, one package, substantially anhydrous and substantially acid-free, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a tack free elastomer comprising:

(a) a polydiorganosiloxane base polymer,

(b) an effective amount of condensation catalyst, and

(c) a stabilizing amount of scavenger for hydroxy functional groups having the formula



where R is a substituted or unsubstituted organo group having at least two carbon atoms; R^1 is a hydrolyzable leaving group selected from the group consisting of alkoxy, amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato, and ureido; R^2 and R^3 are independently selected C_{1-13} monovalent substituted or unsubstituted hydrocarbon radicals; R^4 is a hydrolyzable leaving group selected from the group consisting of alkoxy, amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido; x is equal to 1 or 2 and y is equal to 0 to 3 inclusive.

19. The composition of claim 1 further comprising a filler selected from the group consisting of titantium dioxide, zirconium silicate, silica aerogel, iron oxide, diatomaceous earth, fumed silica, carbon black, precipitated silica, glass fibers, polyvinylchloride, ground quartz and calcium carbonate.

4,499,235

POLYESTER IN-MOULD COATING POWDER

Andreas N. J. Verwer, Beek, and Johannes T. M. Evers, Maarn, both of Netherlands, assignors to DSM Resins B.V., Zwolle, Netherlands

Filed Sep. 21, 1983, Ser. No. 534,244

Claims priority, application Netherlands, Oct. 8, 1982, 8203904

Int. Cl.³ C08G *63/76*; C08L *67/00*

U.S. Cl. 525—38 **16 Claims**

1. In a powdered coating agent, suitable for application in the in-mould coating techinque, composed of a bonding agent comprising an unsaturated polyester resin, a curing catalyst and other additives, the improvement consisting essentially of a bonding agent composed of at least 85% by weight of a crystalline polyester, said crystalline polyester composed of at least 80% by weight of (i) a symmetric unsaturated dicarboxylic acid, a symmetric saturated dicarboxylic acid and an aromatic dicarboxylic acid and (ii) a symmetric aliphatic diol, said bonding agent having a melting point of at least 40° C., a degree of unsaturation of between 1 and 5 moles unsaturation per 1000 grams of said polyester and a viscosity in the melt at 120° C. of at least 1 dPa.s.

4,499,236

FINELY DIVIDED POLYVINYL ACETALS, A PROCESS FOR THEIR PREPARATION, AND THEIR USE IN BAKED COATINGS

Hans D. Hermann, Bad Soden am Taunus, and Ulrich M. Hutten, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,218

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246605

Int. Cl.³ C08F *8/28*

U.S. Cl. 525—58 **20 Claims**

1. A process for preparing a finely divided polyvinyl acetal having an average particle size between 0.5 and 10 μm in an aqueous suspension or, if desired in powder form, by dewatering the suspension, by reacting an aqueous solution of polyvinyl alcohol, in the presence of an acidic catalyst and in the absence or presence of emulsifier, with at least one aliphatic aldehyde having at least 3 carbon atoms, which comprises acetalizing in the presence of 0.1 to 10% by weight, based on the polyvinyl alcohol used, of a completely or partially hydrolyzed graft copolymer of vinyl ester on polyethylene oxide or polyethylene oxide derivative.

4,499,237

POLYCARBONATE-POLYOLEFIN MOULDING COMPOSITIONS

Peter Tacke, Krefeld; Helmut Korber, Odenthal; Josef Merten, Korschenbroich, and Dieter Neuray, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 180,334

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1979, 2934538

Int. Cl.³ C08L *69/00*

U.S. Cl. 525—67 **7 Claims**

1. A mixture comprising

(1) from 70 to 99% by weight of a predominately aromatic polycarbonate and

(2) from 30 to 1% by weight of a polyolefin graft polymer of

(a) 70 to 95% by weight of polyethylene as grafting base and

(b) 5 to 30% by weight of at least one graft-polymerizable vinyl compound, the percentages set forth (1) and (2) being based on the sum of components (1) and (2), and the percentages set forth in (2a) and (2b) being based on the total of components (2a) and (2b), the polyolefin graft polymer having been obtained by contacting a melt of the graft base (2a) with oxygen or an oxygen-containing gas for up to 10 minutes with intensive mixing under a pressure of from 1 to 150 bars and at a temperature of from 80° to 300° C., adding the graft-polymerizable vinyl compound (2b) to be grafted immediately afterwards with intensive mixing in the absence of oxygen or an oxygen-containing gas and removing residual monomers after graft polymerization.

4,499,238

THERMOPLASTIC RESIN PRODUCTS HAVING PEARL-LIKE LUSTER

Nobutoshi Iwata, Tokyo; Kiyoshi Fukushima, Kanagawa; Shinji Fujino; Takeshiro Yamada, both of Tokyo; Hideyuki Hao, Hyougo; Shigeo Tanaka, and Tatsuyuki Mitsuno, both of Chiba, all of Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo and Sumitomo Chemical Company, Limited, Osaka, both of, Japan

PCT No. PCT/JP82/00186, § 371 Date Jan. 24, 1983, § 102(e) Date Jan. 24, 1983, PCT Pub. No. WO82/04058, PCT Pub. Date Nov. 25, 1982

PCT Filed May 21, 1982, Ser. No. 464,500

Claims priority, application Japan, May 23, 1981, 56-77377

Int. Cl.[3] **C08L** *23/12, 53/02*

U.S. Cl. 525—98 **6 Claims**

1. A resin composition for manufacturing thermoplastic resin products having a pearl-like luster and consisting essentially of: 25 to 95 wt% of a styrene-butadiene block copolymer having a butadiene content of 10 to 35 wt% and having a block form expressed by a general formula {(S-B)n}xY (where S represents styrene or a polymer block consisting essentially of styrene; B, butadiene or a polymer block consisting essentially of butadiene; n, an integer ranging between 1 to 5; Y, the residue of a polyfunctional coupling agent used in the form of a radial copolymer; and x, an integer of at least more than 3, representing the number of the functional groups of said polyfunctional coupling agent); and 5 to 75 wt% of crystalline polypropylene.

4,499,239

RESIN COMPOSITION FOR POWDER COATING

Yoichi Murakami, Osaka; Akio Shoji, Kishiwada; Shoichiro Takezawa, Sakai; Noboru Ishikawa, Izumi-ohtsu, and Toshiaki Morita, Sakai, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,768

Claims priority, application Japan, Mar. 31, 1980, 55-40471

Int. Cl.[3] **C08F** *8/00*

U.S. Cl. 525—111 **15 Claims**

1. A resin composition for powder coating, said composition consisting essentially of

(A) 60 to 97% by weight of a polyester resin having an acid value of 20 to 200 mgKOH/g and a softening point of 80° to 150° C., and

(B) 3 to 40% by weight of a glycidyl-containing acrylic polymer which is compatible with and reactive with the polyester resin (A).

4,499,240

LOW DENSITY, POLYBUTADIENE BASED, WET FILAMENT WINDING RESIN

Robert H. Valentine, Sandy, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 23, 1983, Ser. No. 554,665

Int. Cl.[3] **C08F** *8/00*

U.S. Cl. 525—193 **6 Claims**

1. A wet filament winding resin having a viscosity which is between about 1,000 and 5,000 centipoise at a temperature in a range between about 20° and 60° C., a density below about 1.05 grams/cubic centimeter at 25° C. after cure and a pot life which is up to about four months or more at 25° C. where pot life is defined as the time for a winding resin to reach a viscosity of 5,000 centipoise at the winding temperature, said wet filament winding resin being an intimate admixture of components consisting essentially of:

(a) a crosslinkable polymer component in an amount at least about 30% by weight of said resin, said polymer component consisting essentially of unsaturated polybutadiene polymers essentially free of crosslinkable functionality other than the unsaturation thereof, 100 parts by weight of said unsaturated polybutadiene polymers being a first polybutadiene having a number average molecular weight between about 10,000 and 40,000 and a 1,2 vinyl content between 50 and 95% based on total unsaturation present in said first polybutadiene and between about 5 and 100 parts by weight of a second polybutadiene having a number average molecular weight lower than said first polybutadiene and between about 1000 and 2500 and a 1,2 vinyl content between about 1 and 95% based on total unsaturation present in said second polybutadiene;

(b) between about 5 and 150 parts by weight per 100 parts by weight of said first polybutadiene of an unsaturated monomer component that has a lower viscosity than said crosslinkable polymer component, said unsaturated monomer component comprising a monomer having a carbon carbon double bond; and

(c) between about 1 and 10 parts by weight per 100 parts by weight of said first polybutadiene of an initiator component comprising a peroxide-free radical initiator having a 10 hour half life at a temperature greater than 55° C.

4,499,241

COMPOSITION FOR COLD DRAWN FILM

Isao Yoshimura, Fujisawa; Hideo Hata, and Takashi Kaneko, both of Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 949,253, Oct. 6, 1978, Pat. No. 4,277,578. This application Dec. 5, 1980, Ser. No. 213,461

Claims priority, application Japan, Oct. 11, 1977, 52-120917; Nov. 22, 1977, 52-139431; May 30, 1978, 53-63870; May 30, 1978, 53-63872

Int. Cl.[3] **C08L** *23/20, 23/04, 23/06, 23/16*

U.S. Cl. 525—211 **24 Claims**

1. A composition comprising a homogeneous blend of components, namely the combination (A)+(B)+(C); wherein

(A) is at least one selected from the group consisting of low-density polyethylene and copolymers of ethylene with vinyl ester monomers, unsaturated aliphatic monocarboxylic acids and alkyl esters of said acids which are all copolymerizable with ethylene,

(B) is a thermoplastic elastomer having a density of not more than 0.91 g/cm^3 melt index from 0.1 to 10 and made of an ethylene-α-olefin copolymer, and

(C) is crystalline polybutene-1, wherein the components of the composition are in amounts such as to satisfy $0.05 \leqq B/(A+B) \leqq 0.90$ and $0.05 \leqq C/(A+B) \leqq 2.0$ in terms of weight ratios.

4,499,242

THERMOPLASTIC PROPYLENE BLOCK COPOLYMER CONTAINING 1-ALKENE-PROPYLENE-DIENE COPOLYMER BLOCK

Jacobus A. Loontjens, Meerssen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Jan. 7, 1983, Ser. No. 456,433

Claims priority, application Netherlands, Jan. 8, 1982, 8200049

Int. Cl.[3] **C08F** *293/00, 297/08*

U.S. Cl. 525—289 **11 Claims**

1. Thermoplastic propylene block copolymer comprising at least one substantially crystalline polypropylene block, at least one 1-alkene-propylene copolymer block, in at least one of which 1-alkene-propylene-blocks diene units are present which possess the bicyclo[2.2.1.]heptene skeleton.

4,499,243

METHOD OF TREATING DIENE RUBBER WITH AMINO- AND HYDROXY ARYL COMPOUNDS

Charles P. Rader, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 7, 1983, Ser. No. 549,032

Int. Cl.[3] **C08C** *19/20, 19/22*

U.S. Cl. 525—333.1 **2 Claims**

1. A method for improving properties of diene rubber com-

prising masticating the rubber, in the presence of from 0.2 to 5 parts of catechol and from 0.1 to 0.5 parts of sulfur by weight per 100 parts diene rubber by weight at a temperature of from 160° to 210° C., for from 1 to 10 minutes.

4,499,244

PROCESS FOR CURING A CHLORINATED POLYOLEFIN IN THE PRESENCE OF ALIPHATIC POLYHYDROXY ALCOHOL

Wolfgang Honsberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 353,361, Mar. 1, 1982, abandoned. This application Aug. 29, 1983, Ser. No. 527,562

Int. Cl.³ C08C *19/00*

U.S. Cl. 525—384 **8 Claims**

1. A process for curing a chlorinated polyolefin elastomer selected from the group consisting of chlorinated polyethylene having 20–50% chlorine by weight and chlorosulfonated polyethylene having 20–50% chlorine by weight and 0.2–1.5% sulfur by weight, by compounding a mixture of said elastomer, a basic metal oxide or hydroxide acid acceptor, an organic peroxide curing agent, and about 0.2–10 parts per 100 parts elastomer of at least one aliphatic polyhydroxy alcohol with the proviso that when the elastomer is chlorinated polyethylene about 0.01–0.1 moles of acid acceptor per 100 parts chlorinated polyethylene is added to the mixture and when the elastomer is chlorosulfonated polyethylene about 0.025–0.25 moles of acid acceptor per 100 parts chlorosulfonated polyethylene is added to the mixture, and said polyhydroxy alcohol has at least two hydroxyl groups in which the hydroxyl groups are in the 1,2 or 1,3 positions relative to each other and said polyhydroxy alcohol has a molecular weight of less than about 300 and heating the mixture to a temperature above the decomposition temperature of the peroxide and below the decomposition temperature of the elastomer until the elastomer is cured.

4,499,245

CURABLE RESIN COMPOSITION

Nobuyuki Ikeguchi, and Hidenori Kimbara, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Division of Ser. No. 228,988, Jan. 27, 1981, Pat. No. 4,410,666. This application Jul. 15, 1983, Ser. No. 514,043

Claims priority, application Japan, Jan. 29, 1980, 55-9163

Int. Cl.³ C08F *283/00*

U.S. Cl. 525—417 **3 Claims**

1. A curable resin composition comprising:

(a) at least one cyanate ester compound selected from the group consisting of:

(1) a polyfunctional aromatic cyanate ester monomer having the formula:

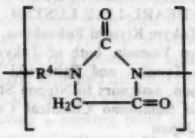
$$R—O—C{\equiv}N)_m$$

where m is 2 to 5 and R is an aromatic organic group, the cyanate groups being bonded to an aromatic ring of said aromatic organic group,

(2) a prepolymer of one or more of said cyanate ester monomer, said prepolymer containing a sym-triazine ring and having an average molecular weight in the range of about 400 to 6,000, and

(3) a coprepolymer of said cyanate ester monomer and an amine;

(b) a polyhydantoin resin having a hydantoin ring in the main chain and having the following repeated units:



(c) at least one compound selected from the group consisting of:

(1) a polyfunctional maleimide,

(2) a homoprepolymer of one or more of said maleimide, and

(3) a coprepolymer of said maleimide and an amine,

said composition including a mixture of components the (a), the (b), and the (c), a preliminary reaction product of components the (a), the (b), and the (c), a combination of said mixture and said preliminary reaction product, a composition of the (a) an a preliminary reaction product of the (b) and the (c), a combination of the (b), and a preliminary reaction product of the (a) and the (c), or a combination of the (c) and a preliminary reaction product of the (a) and the (b).

4,499,246

EPOXY RESINS CONTAINING AS A LATENT CATALYST/ACCELERATOR HALOGENOBISPHENATES OF TERTIARY AMINES

Gérard Tesson, and Christian Joseph, both of Chateaurenault, France, assignors to Societe Anonyme Dite "Manufacture de Produits Chimiques Protex", Paris, France

Filed Feb. 13, 1984, Ser. No. 579,849

Claims priority, application France, Feb. 11, 1983, 83 02872

Int. Cl.³ C08G *59/68*

U.S. Cl. 525—486 **12 Claims**

1. A latent catalyst or accelerator for an epoxy system which consists of a water insoluble halogenobisphenate of a catalytically active tertiary amine.

4,499,247

HIGH-RIGIDITY, HIGH-MELT-VISCOELASTICITY POLYPROPYLENE AND PROCESS FOR PRODUCING THE SAME

Hiromasa Chiba; Kenjiro Obama; Shunji Kawazoe; Takahiro Oka, and Akihiro Satoh, all of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 7, 1983, Ser. No. 501,893

Claims priority, application Japan, Jun. 15, 1982, 57-102907

Int. Cl.³ C08F *4/64, 10/06*

U.S. Cl. 526—142 **6 Claims**

1. A process for producing a high-rigidity and high-melt-viscoelasticity polypropylene for sheets to be post-processed and for blow molding, obtained by subjecting propylene to a multistage polymerization in the presence of a catalyst prepared by reacting an organoaluminum compound (I) or a reaction product of an organoaluminum compound (I) with an electron donor (A), with $TiCl_4$ (C); reacting the resulting solid product (II) with an electron donor (A) and an electron acceptor (B); and combining the resulting solid product (III) with an organoaluminum compound (IV) and an aromatic carboxylic acid ester (V), so as to give a molar ratio (V/VIII) of the aromatic carboxylic acid ester to the solid product (III) of 0.1 to 10.0;

in this polymerization, adjusting the amount of propylene polymerized at the first stage so as to constitute 35 to 65% by weight based on the total amount polymerized and that at the second stage et seq so as to constitute 65 to 35% by weight based thereon; and

when the intrinsic viscosity of the polymer portion having a higher molecular weight is named $[\eta]_H$ and that having a lower molecular weight is named $[\eta]_L$, between the polymer portion formed at the first stage and that formed at the second stage et seq,

adjusting the intrinsic viscosity values of the respective polymer portions so as to satisfy a relationship

$$3.0 \leqq [\eta]_H - [\eta]_L \leqq 6.5 \quad (1).$$

4,499,248

POLY-DIISOPROPENYL BENZENE SYNTHESIS

George Jalics, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 12, 1983, Ser. No. 493,892

Int. Cl.³ C08F *4/48*

U.S. Cl. 526—173 **37 Claims**

1. A process for the synthesis of polymers with a low degree of intermolecular crosslinking containing from about 1 weight percent to 100 weight percent diisopropenyl benzene and from 0 to about 99 weight percent of at least one other monomer comprising: polymerizing from about 1 to 100 weight percent diisopropenyl benzene and from 0 to about 99 weight percent of at least one other monomer in a reaction mixture utilizing an organic solvent containing at least 5 weight percent of at least one ether at a temperature of −40° C. or colder utilizing an alkyl lithium initiator in the presence of at least 0.01 weight percent based upon the total reaction mixture of at least one alpha olefin containing from 2 to 12 carbon atoms; wherein the polymers produced have a gel content of less than 1 percent by weight.

4,499,249

PROCESS FOR PREPARING TETRAFLUOROETHYLENE/FLUORO(ALKYL VINYL ETHER) COPOLYMER

Shinichi Nakagawa, Nara; Tsuneo Nakagawa, Osaka; Sadaatsu Yamaguchi, Osaka; Kiyohiko Ihara, Osaka; Toshihiko Amano, Osaka; Mitsugu Omori, Osaka, and Kohzoh Asano, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 28, 1983, Ser. No. 489,289

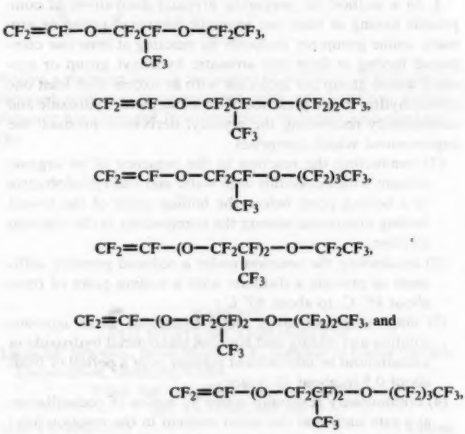
Claims priority, application Japan, Apr. 30, 1982, 57-73671

Int. Cl.³ C08F *214/26*

U.S. Cl. 526—206 **10 Claims**

1. A process for preparing a tetrafluoroethylene/fluoro(alkyl vinyl ether) copolymer, comprising:

polymerizing tetrafluoroethylene and fluoro(alkyl vinyl ether) selected from the group consisting of perfluoro(methyl vinyl ether), perfluoro(ethyl vinyl ether), perfluoro(propyl vinyl ether),



in an aqueous suspension system which comprises a mixed medium of water and a fluorohydrocarbon or a chlorofluorohydrocarbon in a volume ratio of from 1:1 to 10:1 at a temperature of from 0° to 25° C. in the presence of a polymerization initiator of the formula:

wherein n is an integer of 1 to 10.

4,499,250

PROCESS FOR THE POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS

Claes O. A. Lundin, Saltsjö-Boo, and Berit I. Simonsson, Solna, both of Sweden, assignors to KenoGard AB, Stockholm, Sweden

Continuation of Ser. No. 228,950, Jan. 27, 1981, abandoned. This application Jul. 27, 1982, Ser. No. 402,276

Claims priority, application Sweden, Jan. 28, 1980, 8000669

Int. Cl.³ C08F *4/32*

U.S. Cl. 526—209 **4 Claims**

1. A method in the polymerization of vinyl chloride monomers or vinyl chloride and up to 20% by weight, based on the vinyl chloride of copolymerizable monomers in aqueous systems wherein a solid, monomersoluble free-radical forming compound is used as initiator, said initiator being added to the polymerization system in the form of an aqueous dispersion, characterized in that the initiator dispersion contains as the essential emulsifier an ethoxylated nonionic emulsifier with a HLB-value above 15, which emulsifier is an ethoxylated fatty alcohol or an ethoxylated fatty acid.

4,499,251

ADHESIVE COMPOSITIONS

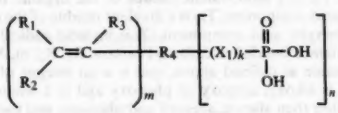
Ikuo Omura; Junichi Yamauchi, both of Kurashiki; Yoshinori Nagase, Takatsuki, and Fumiko Uemura, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 13, 1984, Ser. No. 570,292

Int. Cl.³ C09K *3/00*; A61K *6/08*; C09J *3/14*; C08F *30/02*

U.S. Cl. 526—278 **5 Claims**

1. A method for restoring a carious tooth which comprises coating an adhesive composition which comprises 1 part by weight of (a) a compound of the general formula:



wherein

R_1 represents H, a hydrocarbon group of 1–6 carbon atoms optionally containing halogen, COOR', wherein R' represents a hydrocarbon group of 1–20 carbon atoms optionally containing halogen or halogen;

R_2 is as defined for R_1;

R_3 represents H, a hydrocarbon group of 1–6 carbon atoms optionally containing halogen, halogen or CN;

R_4 represents $(COX_2)_{m1}(CO)_{m2}(ZCO)_{m3}(Z)_{m4}Ra$ wherein Ra represents an organic residue of 6–60 carbon atoms and a valency of m+n; m1, m2, m3 and m4 each represents an integer of 0–4 and satisfies $m1+m2+m3+m4 \leqq m$; X_2 represents O, S or NRb, wherein Rb represents H or alkyl of 1–4 carbon atoms and Z represents O or S;

X_1 is as defined for X_2;

m is an integer of 1–4;

n is an integer of 2–6; and

k is 0 or 1,

0–199 parts by weight of (b) a vinyl monomer copolymerizable with the aforesaid compound, and 0.01–20 parts by weight per 100 parts by weight of the aforesaid polymerizable monomers [(a)+(b)] of (c) a curing agent on the

surface of a tooth cavity and thereafter filling the tooth cavity with a dental filling material which comprises a polymerizable monomer, a filler and a polymerization curing agent.

4,499,252

PROCESS FOR PRODUCING POLYIMIDE PRECURSOR

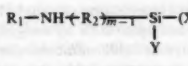
Kazumasa Igarashi; Katsuhiko Yamaguchi, and Munekazu Tanaka, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 28, 1984, Ser. No. 594,063

Int. Cl.³ C08G *73/10*

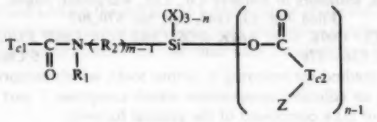
U.S. Cl. 528—38 **12 Claims**

1. A process for producing a polyimide precursor by polymerizing an organic tetracarboxylic acid component and a diamine, which comprises reacting a portion of an organic tetracarboxylic acid component with an aminosilane compound represented by the formula (1)



(1)

wherein R_1 is a monovalent organic group containing an aromatic ring, R_2 is a divalent organic group containing a carbon atom which directly bonds to a silicone atom, m is an integer of 1 or 2, X is a hydrolyzable group selected from the group consisting of alkoxy, acetoxy, phenoxy and halogen, and Y is a group selected from the group consisting of alkyl, alkoxy, acetoxy, phenoxy, silyl, siloxy, disilanyl, organosilyl, organosiloxy, organohalosilyl and organohalosiloxy, through a secondary amino group (>NH) and at least one hydrolyzable group (X) in the above formula (1) to prepare a silane-modified polycarboxylic acid component represented by the formula (2)



(2)

wherein T_{c1} is a monovalent residue of the organic tetracarboxylic acid component, T_{c2} is a divalent residue of the organic tetracarboxylic acid component, Z is an acid radical which may contain X bonded to carbonyl carbon, R_1, R_2, m, X and Y are the same as defined above, ar 1 n is an integer of 2 or 3 when Y is alkoxy, acetoxy or phenoxy and is 2 when Y is a group other than alkoxy, acetoxy and phenoxy, and then polymerizing the resulting silane-modified polycarboxylic acid component with the residual organic tetracarboxylic acid component and a diamine.

4,499,253

PROCESS FOR THE PREPARATION OF POLYISOCYANATES CONTAINING ISOCYANURATE GROUPS AND THEIR USE FOR THE PREPARATION OF ISOCYANATE-POLYADDITION PRODUCTS

Dimitrios Kerimis, Cologne; Hanns P. Müller, Odenthal, and Kuno Wagner, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 18, 1983, Ser. No. 514,765

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1982, 3227489

Int. Cl.³ C08G *18/18*

U.S. Cl. 528—45 **12 Claims**

1. A process for the preparation of polyisocyanates containing isocyanurate groups which comprises

(a) trimerizing a portion of the isocyanate groups of an organic polyisocyanate in the presence of a catalytic amount of a quaternary ammonium salt which is the reaction product of a tertiary amine and an alkylating ester of an acid of phosphorus and

(b) terminating the trimerization reaction by the addition of a catalyst poison.

4,499,254

REACTION INJECTION MOLDED ELASTOMERS CONTAINING HIGH MOLECULAR WEIGHT ORGANIC ACIDS

Richard J. G. Dominguez; Edward E. McEntire, and Carter G. Naylor, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,235

Int. Cl.³ C08G *18/32, 18/34, 18/50*

U.S. Cl. 528—49 **12 Claims**

1. A reaction injection molded elastomer comprising the reaction product of ingredients comprising primary or secondary amine terminated polyethers of greater than 2,500 molecular weight having greater than 50% of their active hydrogens in the form of amine hydrogens, a chain extender, an aromatic polyisocyanate and a carboxylic acid in an amount effective to provide improved green strength, represented by the structure:

where n=1–3 and where R contains 10-n carbon atoms or more and R may be alkyl (cyclic, linear or branched), alkaryl, aralkyl or aryl saturated or unsaturated, and also contain functional groups hydroxyl, chloro, bromo, ester, ether, nitro or amide.

4,499,255

PREPARATION OF EPOXY RESINS

Chun S. Wang, Lake Jackson; Ha Q. Pham, Richwood, and James L. Bertram, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 515,324, Jul. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 417,015, Sep. 13, 1982, abandoned. This application Aug. 16, 1983, Ser. No. 523,910

Int. Cl.³ C08G *59/06, 59/10*

U.S. Cl. 528—95 **12 Claims**

1. In a method for preparing glycidyl derivatives of compounds having at least one aromatic hydroxyl group or aromatic amine group per molecule by reacting at least one compound having at least one aromatic hydroxyl group or aromatic amine group per molecule with an excess of at least one epihalohydrin in the presence of an alkali metal hydroxide and subsequently recovering the glycidyl derivative product; the improvement which comprises

(1) conducting the reaction in the presence of an organic solvent which codistills with water and said epihalohydrin at a boiling point below the boiling point of the lowest boiling compound among the components in the reaction mixture;

(2) conducting the reaction under a reduced pressure sufficient to provide a distillate with a boiling point of from about 45° C. to about 80° C.;

(3) employing said alkali metal hydroxide as an aqueous solution and adding said aqueous alkali metal hydroxide in a continuous or intermittent manner over a period of from about 0.5 to about 10 hours;

(4) continuously removing water by means of codistillation at a rate such that the water content in the reaction mixture is less than about 6 percent by weight;

(5) separating the water from the codistillate and returning the solvent and epihalohydrin to the reaction mixture.

4,499,256

ANISOTROPIC POLYESTERAMIDE POLYMERS HAVING IMPROVED RETENTION OF PHYSICAL PROPERTIES AT ELEVATED TEMPERATURES AND METHODS OF MANUFACTURE THEREOF

David J. Blundell, Welwyn Garden City; Brian P. Griffin, St. Albans, and William A. MacDonald, Ware, all of England, assignors to Imperial Chemical Industries PLC, London, England

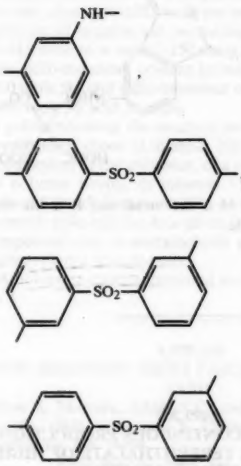
Filed Nov. 3, 1982, Ser. No. 438,730

Claims priority, application United Kingdom, Nov. 16, 1981, 8134511; Nov. 16, 1981, 8134512

Int. Cl.³ C08G *69/44*

U.S. Cl. 528—172 11 Claims

1. An anisotropic-melt-forming polyesteramide having improved stiffness retention at elevated temperatures prepared by reacting together reactants selected from (a) dihydric phenols, aromatic dicarboxylic acids, hydroxyaromatic acids, aromatic diamines, aminophenols and aminoaromatic acids and their polyesteramide forming derivatives wherein at least 40 mole % of the reactants (A) have their chain extending bonds in either coaxial or parallel and oppositely directed relationship and sufficient of non-linear reactants (B) selected from reactants containing at least one radical of formula



to give a polymer having an improved retention of stiffness at elevated temperatures compared with an otherwise similar polymer not prepared from reactants including said reactants (B).

4,499,257

POLY(ESTER-CARBONATE)S

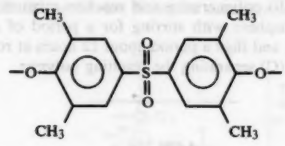
Louis M. Maresca, Belle Mead, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 18, 1983, Ser. No. 485,946

Int. Cl.³ C08G *63/64*

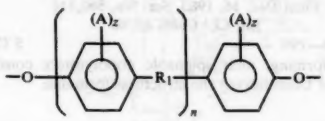
U.S. Cl. 528—173 4 Claims

1. A poly(ester-carbonate) resin consisting essentially of from about 20 weight percent to 100 weight percent of repeating units (I) having the formula



(I)

and from 0 weight percent to about 80 weight percent of repeating units (II) having the formula



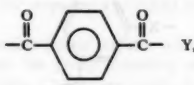
(II)

wherein A is selected from alkyl groups of 1 to 4 carbon atoms, chlorine or bromine, each z, independently, has a value of from 0 to 4 inclusive, n has a value of 0 or 1, and R_1 is a divalent saturated or unsaturated aliphatic hydrocarbon radical, or a cycloalkylidene or cycloalkylene radical having up to and including 9 carbon atoms, O, CO, SO_2, S or a direct bond, with the proviso that when R_1 is SO_2, then repeating unit (II) is not the same as repeating unit (I);

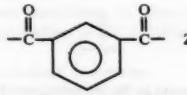
the repeating units (I) and the repeating units (II) are connected by interbonding units,

X units of the formula:

and one or more of Y units of the formula:



and Z units of the formula:



wherein the mole ratio of X units to the combination of one or more Y and Z units is about 0.25 to 9.

4,499,258

POLYAROMATIC ETHER-SULFONE-KEYTONES WITH FLUORO-SUBSTITUTED-P-CYCLOPHANE UNITS AS CROSS-LINKING SITES

Carl S. Marvel, Tucson, Ariz., and See Lin, Taipei, Taiwan, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 552,552, Nov. 16, 1983, Pat. No. 4,476,062. This application May 30, 1984, Ser. No. 615,507

Int. Cl.³ C08G *75/20*

U.S. Cl. 528—173 4 Claims

1. A process for synthesizing a polyaromatic ether-sulfone-ketone containing fluoro-substituted-p-cyclophane units along the polymer chain which comprises the steps of (A) forming a reaction mixture of (1) isophthaloyl chloride and/or terephthaloyl chloride, (2) 2,2'-diphenoxy dyphenyl sulfone, (3) di-

phenyl ether, and (4) 1,1, 2,2, 9,9, 10,10-octafluoro [2,2]-p-cyclophane; (B) polymerizing said reaction mixture within a nitrogen atomsphere with stirring for a period of about 12 hours at 0° C. and then a period about 12 hours at room temperature; and (C) separating the resulting polymer.

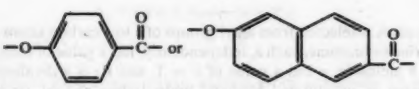
4,499,259

OPTICALLY ANISOTROPIC MELT FORMING COPOLYESTERS

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

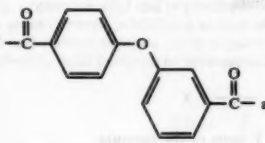
Filed Dec. 16, 1983, Ser. No. 562,114
Int. Cl.³ C08G 63/60
U.S. Cl. 528—190 **5 Claims**

1. Fiber-forming, melt spinnable copolyesters consisting essentially of Units having the structural formulas:

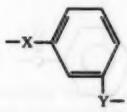


I

II



III



IV

where X and Y are the same and are selected from —O— or

said Units being present in the proportions of from about 10 to 60 mol % of Unit I, from about 15 to 45 mol % of Unit II, and from about 15 to 45 mol % of Unit III.

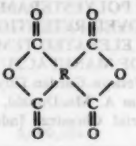
4,499,260

PHTHALOCYANINE POLYMERS

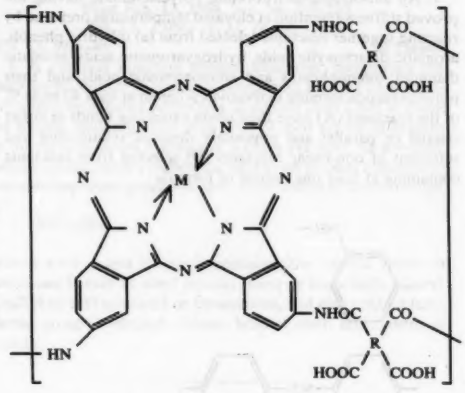
Bappalige N. Achar, Karnataka, India; George M. Fohlen, Millbrae, and John A. Parker, Los Altos, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 10, 1982, Ser. No. 440,656
Int. Cl.³ C08G 73/10, 73/20
U.S. Cl. 528—229 **40 Claims**

1. A method of forming polymers of a metal 4,4',4'',4''' tetraamino phthalocyanine which comprises reacting the metal 4,4',4'',4''' tetraamino phthalocyanine in liquid phase at about 20° C. to about 50° C. with a tetracarboxylic dianhydride of the formula



wherein R is an organic group selected from the group consisting of aromatic and alicyclic groups to produce an amic acid polymer having a



recurring unit wherein M is the metal and R is the organic group of the dianhydride.

4,499,261

PROCESS FOR THE CONTINUOUS PRODUCTION OF POLYBUTYLENE TEREPHTHALATE OF HIGH MOLECULAR WEIGHT

Helmut Heinze, Frankfurt am Main; Fritz Wilhelm, Karben; Klaus Mackensen, and Ferdinand Finkeldei, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Davy McKee AG, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,289
Int. Cl.³ C08G 63/34
U.S. Cl. 528—279 **7 Claims**

1. In a continuous process for producing polybutylene terephthalate of high molecular weight in a plurality of stages, during which the temperature is progressively increased from 160° C. to 260° C. by transesterifying dimethyl terephthalate with an excess of butanediol-1,4 in the presence of a titanium catalyst at superatmospheric pressure, then precondensing and polycondensing at subatmospheric pressure the terephthalic acid ester thus produced, the improvement which comprises

(a) condensing the vapors volatilized during said precondensation and polycondensation steps, which vapors contain a major proportion of butanediol-1,4, by contacting said vapors with fresh butanediol-1,4 and

(b) recycling the condensed volatilized and fresh butanediol-1,4 to the transesterification stage for reaction with dimethyl terephthalate.

4,499,262

PROCESS FOR THE PREPARATION OF SULFO-MODIFIED POLYESTERS

David R. Fagerburg, and Finley E. McFarlane, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 9, 1984, Ser. No. 588,168
Int. Cl.³ C08G 63/04, 63/34
U.S. Cl. 528—279 14 Claims

1. A process for the preparation of a sulfo-modified polyester comprising

(a) reacting under polyester forming conditions (1) a 100 mole % dicarboxylic acid component comprising at least about 85 mole % terephthalic acid or an ester-forming derivative thereof and about 0.1 to about 5.0 mole % of a difunctional sulfo-monomer containing at least one metal sulfonate group attached to an aromatic nucleus, the functional groups being hydroxyalkoxy, carboxy or amine, and (2) a 100 mole % glycol component comprising at least about 85 mole % ethylene glycol, the reaction being conducted in the presence of a catalyst system comprising a titanium compound and an organic salt of an alkali metal, the titanium being present in the amount of at least about 10 to about 60 ppm based on the acid component of the polyester and the organic salt being present in the amount, based on a sulfo-monomer content of 0.5 mole % or less, of at least 0.025 mole per mole of polymer with the amount of organic salt increasing proportionately from 0.025 mole to at least 0.250 mole per mole of polymer as the sulfo-monomer content increases from 0.5 mole % to 5.0 mole %, said sulfo-monomer content being based on a 100 mole % acid fraction,

(b) polycondensing the reaction product of step (a) in the presence of about 13 to about 240 ppm, based on the acid component of the polyester, of a phosphate ester to obtain a polymer having an inherent viscosity of about 0.3 to about 0.9 and characterized by an improved critical planar stretch ratio relative to a given inherent viscosity and an improved rate of acetaldehyde generation relative to a given planar stretch ratio.

9. A polyester material prepared according to the process of claim 1.

4,499,263

VAPOR RECOVERY FROM PARTICLES CONTAINING SAME

Kathleen A. Messura, Aiken, S.C., and Charles A. Ayres, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, OK 74004

Filed May 17, 1983, Ser. No. 495,541
Int. Cl.³ C08F 6/00; C08G 00/00; C08J 3/00
U.S. Cl. 528—483 9 Claims

1. A process comprising

(a) introducing polymer particles containing a first amount of diluent or solvent into a first zone;

(b) introducing a first mixture of inert gas and diluent or solvent vapor at a first temperature into the first zone to evaporate a first portion of the diluent or solvent from the polymer particles;

(c) withdrawing from the first zone a second mixture of inert gas and diluent or solvent vapor;

(d) recycling a portion of the second mixture to the first zone;

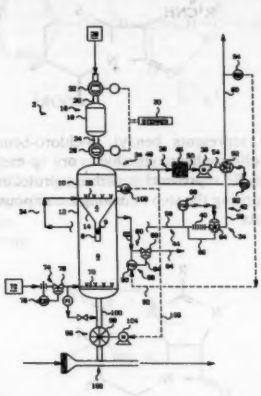
(e) withdrawing polymer particles containing a second amount of diluent or solvent from the first zone;

(f) introducing the polymer particles containing the second amount of solvent into a second zone;

(g) introducing inert gas into the second zone to separate a second portion of the diluent or solvent from the polymer particles and form a third mixture of inert gas and diluent or solvent vapor;

(h) withdrawing a first portion of the third mixture from the second zone and forming the first mixture therewith;

(i) withdrawing polymer particles containing a third amount of diluent or solvent from the second zone wherein the



polymer particles and gases flow countercurrently through the first zone and the second zone.

4,499,264

PREPARATION OF AMINO POLYOLS

Kenneth G. McDaniel, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 27, 1983, Ser. No. 507,815
Int. Cl.³ C08G 59/64
U.S. Cl. 536—50 17 Claims

1. In a process for preparing a modified amino polyol which comprises:

(a) mixing an amino polyol initiator with an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, 1,2-butylene oxide, styrene oxide, glycidol and mixtures thereof;

(b) reacting and digesting the initiator with the alkylene oxide at a temperature of 30° C. to 180° C. to form a crude polyol mixture comprising an alkoxylated amino polyol with hydroxyl number of 300 to 900 and residual alkylene oxide;

wherein the improvement comprises:

(c) reacting the residual alkylene oxide with a second amine in situ at a temperature of 30° C. to 180° C. to form an alkanol amine.

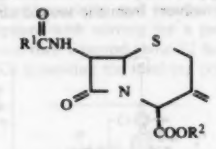
4,499,265

PROCESS FOR PREPARING 3-EXO-METHYLENECEPHAM DERIVATIVES

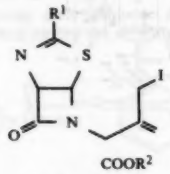
Sigeru Torii; Hideo Tanaka; Junzo Nokami; Takashi Shiroi, all of Okayama; Norio Saito, Tokushima, and Michio Sasaoka, Okayama, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Kaisha, Japan

Filed Aug. 9, 1982, Ser. No. 406,368
Claims priority, application Japan, Aug. 20, 1981, 56-131039
Int. Cl.³ C07D 502/02
U.S. Cl. 544—16 18 Claims

1. A process for preparing a 3-exo-methylenecepham derivative represented by the formula



wherein R^1 represents benzyl, p-chloro-benzyl, phenoxymethyl, p-chlorophenoxymethyl or p-methoxy-phenoxymethyl, and R^2 represents a carboxy-protecting group, the process comprising the step of mixing a compound represented by the formula



wherein R^1 and R^2 are as defined above with a mixture of an organic solvent and an acid aqueous solution, thereby effecting a cyclization reaction.

4,499,266

3,6-DINITRO-1,8-NAPHTHALIMIDES

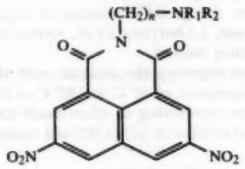
Chia C. Cheng, Leawood, and Robert K. Zee-Cheng, Shawnee, both of Kans., assignors to Warner-Lambert Company, Ann Arbor, Mich.

Filed Apr. 1, 1983, Ser. No. 481,122

Int. Cl.³ C07D *221/14, 413/06*

U.S. Cl. 544—126 **3 Claims**

1. 3,6-Dinitro-1,8-naphthalimide compounds having in free base from the structure formula I:



I

and the pharmaceutically acceptable salts thereof, where n is 2 or 3, and R_1 and R_2 are H, lower alkyl, lower hydroxyalkyl, pyrrolidinyl, morpholino, or piperidinyl.

4,499,267

ADDITIVE FOR OTTO CYCLE ENGINES AND FUEL MIXTURE SO OBTAINED

Mario Scifoni, Via della Divina Provvidenza 26, 00166 Roma, Italy

Filed Oct. 21, 1983, Ser. No. 544,170

Claims priority, application Italy, Aug. 17, 1983, 48858 A/83

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **19 Claims**

1. Fuel additive for Otto cycle engines consisting essentially of a mixture of water, low molecular weight alcohols and liquid extracted from prickly pear leaves, said liquid being present in an amount and in concentrations sufficient to provide a passive protective film on the parts of said engine whereby said parts are smooth, slippery and bright and free of oxidation.

4,499,268

PROCESS FOR THE PREPARATION OF ISOMELAMINES

Friedrich Lohse, Oberwil, and Helmut Zondler, Bottmingen, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

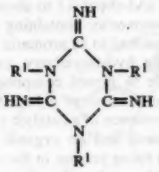
Filed Feb. 15, 1983, Ser. No. 466,454

Claims priority, application Switzerland, Feb. 23, 1982, 1105/82

Int. Cl.³ C07D *251/70*

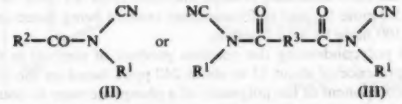
U.S. Cl. 544—196 **7 Claims**

1. A process for the preparation of an isomelamine of the formula I



(I)

in which each R^1 is alkyl having 1 to 8C atoms, aralkyl having not more than 12C atoms, allyl or methallyl, which comprises reacting an N-cyano-N-(ar)alkyl- or N-cyano-N-(meth)allyl-carboxylic acid amide of the formula II or III



(II) (III)

in which each R^1 is as defined under formula I, R^2 is a hydrogen atom, alkyl having 1 to 16C atoms, cycloalkyl having 5 to 8C atoms or aryl having 6 to 10 ring C atoms and R^3 is a direct bond or alkylene having 1 to 12C atoms, with

(a) an aqueous sodium hydroxide, potassium hydroxide or ammonia solution or

(b) a primary aliphatic or cycloaliphatic amine in a solvent, or with

(c) a primary aliphatic alcohol in the presence of a catalytic amount of a basic compound,

in each case in a temperature range from −20° C. to 200° C., at least 3 hydroxyl or amino group equivalents being used per 3 carboxylic acid amide group equivalents.

4,499,269

FUSED 1,3,5-TRIAZINES

Colin Bennion, Loughborough, and David Robinson, Shepshed, both of England, assignors to Fisons plc, Ipswich, England

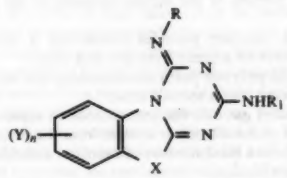
Filed Apr. 20, 1983, Ser. No. 486,795

Claims priority, application United Kingdom, Apr. 30, 1982, 8212654

Int. Cl.³ C07D *513/04, 498/04, 487/04*

U.S. Cl. 544—198 **34 Claims**

1. A compound of formula I,



I

in which

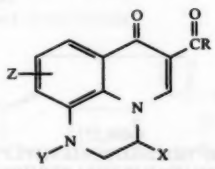
X is O, S or N—R_7,
each Y, which may be the same or different, is H, OH, alkyl C1–C8, alkoxy C1–C8 or halogen,
n is an integer from 1 to 4 inclusive,
R and R_1, which may be the same or different, are each H; alkanoyl C2–C8 or a group R_4 in which R_4 is alkyl C1–C8 optionally substituted by phenyl; or is cycloalkyl C5 or C6; or is a group of formula XVI,

XVI

in which
W and Z, which may be the same or different, are each H, OH, alkoxy C1–C8, phenyl-alkoxy C7 to C10, alkyl C1–C8, halogen, —NR_2R_3, —$COOR_2$, NO_2, alkanoyloxy C2–C8, or —$OCH_2CH_2NR_2R_3$, and
R_2, R_3 and R_7, which may be the same or different, are each H or alkyl C1–C8,
provided that when X is N—R_7 and R is H, then R_1 is not (a) H when any Y groups are H, alkyl C1–C8, alkoxy C1–C8 or halogen, or (b) unsubstituted phenyl when all Y groups are H,
and pharmaceutically acceptable salts thereof.

4,499,270
SUBSTITUTED PYRIDOQUINOXALINE-6-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF
John F. Gerster, Woodbury, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.
Division of Ser. No. 254,973, Apr. 16, 1981, Pat. No. 4,348,521. This application Feb. 22, 1982, Ser. No. 351,135
Int. Cl.³ C07D *471/04;* **A61K** *31/495*
U.S. Cl. 544—344 **8 Claims**

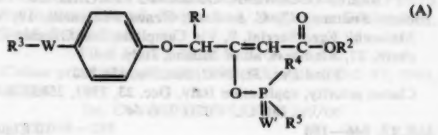
1. A compound of the formula



wherein X is hydrogen or methyl; Y is hydrogen, methyl, ethyl or phenyl ; Z is hydrogen, halogen, lower alkyl or lower alkoxy; and R is OH, a lower alkyl ester residue, a lower alkyl amide residue, or OM wherein M is a pharmaceutically-accepted cation.

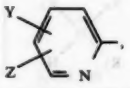
4,499,271
3-PHOSPHINYLOXY-4-(SUBSTITUTED PHENOXY)ALKENOIC ACID ESTERS
Gustave K. Kohn, Palo Alto, and Joe T. Bamberg, Redwood City, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.
Filed Aug. 20, 1982, Ser. No. 410,173
Int. Cl.³ C07F *9/58*
U.S. Cl. 546—22 **7 Claims**

1. A compound of the following formula (A):



(A)

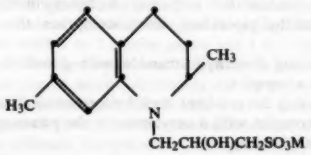
wherein,
R^1 is hydrogen or lower alkyl;
R^2 is lower alkyl, lower alkenyl or lower alkynyl;
W is oxygen, sulfur or amino;
W' is oxygen;
R^3 is the group



in which,
each of Y and Z is independently hydrogen, lower alkyl, lower haloalkyl, bromo, chloro or fluoro;
R^4 is —OR^6, —SR^6 or —NHR^6;
R^5 is lower alkyl; lower haloalkyl; lower cycloalkyl; phenyl; phenyl substituted with lower alkyl, lower haloalkyl or halogen; benzyl; benzyl substituted with lower alkyl, lower haloalkyl or halogen; —OR^7; —SR^7; or —NHR^7;
R^6 is lower alkyl; lower haloalkyl; phenyl; phenyl substituted with lower alkyl, lower haloalkyl or halogen; benzyl; or benzyl substituted with lower alkyl, lower haloalkyl or halogen; and
R^7 is independently selected from the values of R^6.

4,499,272
NH_4^+ OR GROUP IA METAL 2,7-DIMETHYL-1,2,3-TETRAHYDRO-β-HYDROXY-1-QUINOLINEPROPANESULFONATES
John A. Hyatt, and Clarence A. Coates, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 20, 1982, Ser. No. 409,798
Int. Cl.³ C07C *143/58;* **C07D** *215/36, 265/28;* **C09B** *29/44*
U.S. Cl. 546—172 **1 Claim**

1. The process for preparing a compound of the formula



wherein M is NH_4^+ or a group IA metal, comprising reacting at between 100° C. and 180° C., in ethylene glycol, a sulfonate of the formula X—$CH_2CH(OH)CH_2SO_3M$ wherein X is halogen, with 2,7-dimethyl-1,2,3,4-tetrahydroquinoline.

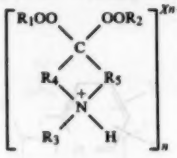
4,499,273

SALTS OF AMINIC ORGANIC PEROXIDES

Alberto Fontana, 47, C. so Lodi; Renzo Fontanelli, 19, Via Maiocchi; Egeo Sacrini, 9, Via Campiglio, and Osvaldo Cicchetti, 57, Via Sapri, all of Milano, Italy

Filed Dec. 21, 1982, Ser. No. 451,882
Claims priority, application Italy, Dec. 23, 1981, 25822 A/81
Int. Cl.³ C07D *211/44*
U.S. Cl. 546—188 10 Claims

1. An organic peroxide having two peroxy functional groups, containing in the molecule thereof an atom of salified aminic nitrogen, and having the formula:



wherein:

R_1 and R_2 are each an alkyl radical selected from the group consisting of t.butyl, t.amyl, t.octyl and cumyl;

R_3 is hydrogen, an alkyl radical having 1 to 8 C, a cycloalkyl having 5–6 carbon atoms in the ring, or an aryl radical selected from the group consisting of the phenyl and benzyl radicals;

R_4 is the methylene, ethylene or trimethylene radical, at least mono-substituted by methyl or phenyl;

R_5 is the methylene or ethylene radical at least mono-substituted by methyl or phenyl;

X is an anion of an inorganic or organic acid in which one or more acid hydrogens are substituted by the aminic cation; and

n is 1, 2 or 3 and represents the number of hydrogen atoms which are salified.

4,499,274

PROCESS FOR PREPARATION OF SUBSTITUTED FORMAMIDINE AND SUBSTITUTED N-IMINOMETHYL PIPERIDINE

Georg Feth, Schaffhausen, Switzerland, and John E. Mills, Hatfield, Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Filed Mar. 17, 1983, Ser. No. 476,443
Int. Cl.³ C07D *211/14*; C07C *123/00*
U.S. Cl. 546—229 16 Claims

1. A process for preparing N,N-dimethyl-N'-octylformamidine which comprises the following steps:

(1) reacting dimethylformamide with dimethyl sulfate to form a dimethylformamide/dimethyl sulfate complex;

(2) reacting said complex with n-octylamine in the presence of added dimethylamine; and

(3) thereafter treating the reaction mixture with aqueous base to obtain N,N-dimethyl-N'-octylformamidine.

14. A process for preparing 4-(diphenylmethyl)-1-[(octylimino)methyl]piperidine which comprises the following steps:

(1) reacting dimethylformamide with dimethyl sulfate to form a complex;

(2) reacting the resultant dimethylformamide/dimethyl sulfate complex with n-octylamine in the presence of added dimethylamine;

(3) thereafter treating the reaction mixture with aqueous base to form N,N-dimethyl-N'-octyl-formamidine; and

(4) reacting said formamidine with 4-(diphenyl-methyl)-piperidine to obtain 4-(diphenylmethyl)-1-[(octylimino)-methyl]piperidine.

4,499,275

PHENOXYPICOLINIC ALDEHYDES

Kiyomi Ozawa, and Shigeru Ishii, both of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 315,228, Oct. 26, 1981, Pat. No. 4,393,213.
This application Mar. 14, 1983, Ser. No. 475,325
Claims priority, application Japan, Jan. 14, 1981, 56-3224; Jul. 6, 1981, 56-105294
Int. Cl.³ C07D *213/48*
U.S. Cl. 546—298 1 Claim

1. 5-Fluoro-6-phenoxypicolinic aldehyde.

4,499,276

REDUCTION OF TRICHLOROMETHYLPYRIDINES TO DICHLOROMETHYLPYRIDINES

Sudarshan K. Malhotra, Walnut Creek, and Jon A. Orvik, Danville, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 256,863, Apr. 24, 1981, abandoned. This application Mar. 14, 1983, Ser. No. 475,017
Int. Cl.³ C07D *213/26*
U.S. Cl. 546—346 7 Claims

1. A process for reducing the trichloromethyl group in a (trichloromethyl)pyridine compound to a dichloromethyl group which comprises treating said compound with a strong base and a reductant source material selected from the group consisting of chloroform, dialkylsulfoxides, arylalkylsulfones, dialkylsulfones and ketones wherein each alkyl group is of from one to four carbon atoms and the term aryl represents phenyl or tolyl, said sulfoxides, sulfones and ketones must have a hydrogen atom on the carbon atom which is alpha to the —C=O, —SO, or —SO_2 group, said ketones must also have a base abstractable hydrogen, said treatment being carried out in the presence of a polar, non-hydroxylic solvent providing sufficient solubility for the reactants and/or a quaternary ammonium phase transfer catalyst at a temperature of from about −20° C. to about 160° C. for a time sufficient to convert to the corresponding (dichloromethyl)pyridine compound.

4,499,277

REDUCTION OF TRICHLOROMETHYLPYRIDINES TO DICHLOROMETHYLPYRIDINES

Sudarshan K. Malhotra, Walnut Creek, and Jon A. Orvik, Danville, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 256,863, Apr. 24, 1981, abandoned. This application Mar. 14, 1983, Ser. No. 475,020
Int. Cl.³ C07D *213/26*
U.S. Cl. 546—346 8 Claims

1. A process for reducing the trichloromethyl group in a (trichloromethyl)pyridine compound to a dichloromethyl group which comprises treating said compound with a strong base and a reductant source material selected from the group consisting of dialkylphosphites and trialkyl phosphites wherein each alkyl group is of from one to four carbon atoms, said treatment being carried out in the presence of a polar, non-hydroxylic solvent providing sufficient solubility for the reactants and/or a quaternary ammonium phase transfer catalyst at a temperature of from about −20° C. to about 160° C. for a time sufficient to convert to the corresponding (dichloromethyl)pyridine compound.

4,499,278

TRANS-3-CARBOXYMETHYLENE-4-CARBOXY-5-METHYL-DELTA2-ISOXAZOLINE AS INTERMEDIATE

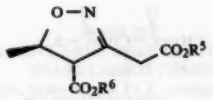
David G. Melillo, Scotch Plains, and Kenneth M. Ryan, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 219,630, Dec. 24, 1980, abandoned, which is a division of Ser. No. 112,057, Jan. 14, 1980, Pat. No. 4,269,772. This application Nov. 22, 1982, Ser. No. 443,701

Int. Cl.³ C07D *487/04;* A61K *31/40*

U.S. Cl. 548—240 2 Claims

1. The compound having the structure:



wherein R^5 and R^6 are removable protecting groups.

4,499,279

ISOXAZOLYL INDOLAMINES

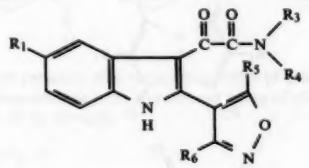
Leonard J. Brand, Randolph, and Jeffrey Nadelson, Denville, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 351,185, Feb. 22, 1982, Pat. No. 4,419,353, which is a division of Ser. No. 245,188, Mar. 18, 1981, Pat. No. 4,336,379, which is a continuation-in-part of Ser. No. 196,785, Oct. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 138,872, Apr. 10, 1980, abandoned. This application Aug. 22, 1983, Ser. No. 524,996

Int. Cl.³ C07D *261/06, 209/10*

U.S. Cl. 548—247 8 Claims

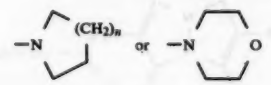
1. A compound of the formula



wherein R_1 represents hydrogen, fluoro, chloro, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms,

R_3 and R_4 each independently represent lower alkyl having 1 to 4 carbon atoms, or

R_3 and R_4 together with N represent



wherein n is 1, 2 or 3, and

R_5 and R_6 each independently represent hydrogen or lower alkyl having 1 to 4 carbon atoms.

4,499,280

TRIAZOLES, AND THEIR USE AGAINST INSECT PESTS

Fritz Reisser, Therwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Jul. 15, 1982, Ser. No. 398,670

Claims priority, application United Kingdom, Jul. 17, 1981, 8122064

Int. Cl.³ A01N *43/64;* C07D *249/06*

U.S. Cl. 548—255 1 Claim

1. The compound 1-(3,5-Di-trifluoromethylphenyl)1,2,3-triazole.

4,499,281

SUBSTITUTED TRIAZOLYLMETHYL-OXIRANES AND THEIR USE AS INTERMEDIATES FOR FUNGICIDES

Graham Holmwood, and Erik Regel, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

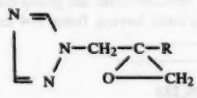
Filed Feb. 26, 1982, Ser. No. 352,689

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111238

Int. Cl.³ A01N *43/64;* C07D *249/08, 405/06*

U.S. Cl. 548—262 6 Claims

1. A substituted triazolylmethyl-oxirane of the formula



in which

R represents alkyl with 1 to 4 carbon atoms which optionally carries one or more substituents selected from halogen, alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms, halogenoalkoxy with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, halogenoalkylthio with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, cyano, alkoxycarbonyl with 1 to 4 carbon atoms in the alkoxy part, phenyl (which optionally carries one or more substituents selected from halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, halogenoalkoxy with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms and halogenoalkylthio with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms), phenoxy (which optionally carries one or more substituents selected from halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, halogenoalkoxy with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms and halogenoalkylthio with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms) and benzyloxy (which optionally carries one or more substituents on the phenyl part selected from halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, halogenoalkoxy with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms and halogenoalkylthio with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms), or

R represents cycloalkyl with 3 to 7 carbon atoms which is optionally substituted by alkyl with 1 to 4 carbon atoms.

4,499,282

QUATERNARY AMMONIUM COMPOUNDS

Drahomir Dvorsky, and Karel Cerovsky, both of Dvur Kralove nad Labem, Czechoslovakia, assignors to Vyzkumny ustav zuslechtovaci, Dvur Kralove nad Labem, Czechoslovakia

Division of Ser. No. 354,494, Mar. 3, 1982, abandoned. This application Jul. 21, 1983, Ser. No. 516,147

Claims priority, application Czechoslovakia, Mar. 4, 1981, 1537-81; Mar. 20, 1981, 2050-81

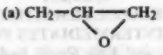
Int. Cl.³ C07D *405/06, 405/14, 233/60*

U.S. Cl. 548—336 **1 Claim**

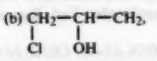
1. Quarternary ammonium compound of the formula

$$[Y-M-Y]^{k+}\ \frac{k}{n}\ X^{n-}$$

wherein k is an integer of 1–2,
n is an integer of 1–3,
X is an anion of a strong acid, and
Y is selected from the group consisting of



and



said group being bound to the nitrogen atoms of an imidazole ring M, the individual atoms of the imidazole having bound thereto at least one substituent selected from the group consisting of hydrogen, and alkyl groups having from 1–4 carbon atoms.

4,499,283

PROCESS FOR PREPARING 1-SUBSTITUTED-6-N-PROPYL-8-METHYLIMIDAZO[1,5-d]-AS-TRIAZIN-4-(3H)-ONES

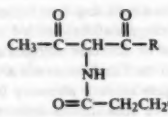
Sivaraman Raghu, Norwalk, and Steven L. Peake, New Canaan, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 28, 1982, Ser. No. 393,003

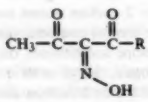
Int. Cl.³ C07D *233/66*

U.S. Cl. 548—343 **2 Claims**

1. The process of preparing 3-butyrylamino-2,4-alkanediones of the formula:

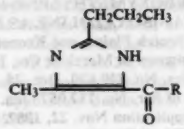


wherein R is methyl, ethyl or n-propyl which comprises hydrogenating a 3-oximino-2,4-alkanedione of the formula:

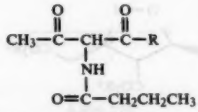


wherein R is an hereinabove defined with palladium on charcoal as catalyst in butyric anhydride as solvent at a temperature of 25°–100° C. for a period of time of 8–24 hours.

2. The process of preparing 5-imidazolyl ketones of the formula:



wherein R is methyl, ethyl or n-propyl which comprises condensing a 3-butyrylamino-2,4-alkanedione of the formula:



wherein R is as hereinabove defined with an ammoniating agent of the formula: $[NH_4^{\oplus}]_n[X^{n\ominus}]$ wherein X is an anion and n is an integer from 1 to 4 in an inert organic solvent at a temperature of 100°–150° C. for a period of time of 8–24 hours.

4,499,284

1,5-DIAZABICYCLO [3.3.0.]OCTADIENEDIONES

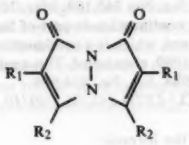
Edward M. Kosower, Tel-Aviv, Israel; Barak Pazhenchevsky, Lawrence, Kans., and Eli Hershkowitz, Dour Na Hanegev, Israel, assignors to Tel Aviv University, Tel Aviv, Israel

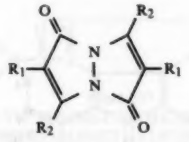
Continuation of Ser. No. 068,544, Aug. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 938,918, Sep. 5, 1978, abandoned. This application Jun. 21, 1982, Ser. No. 390,769

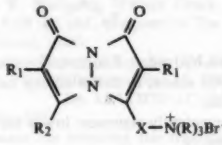
Int. Cl.³ C07D *231/54*

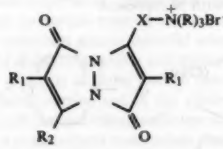
U.S. Cl. 548—359 **13 Claims**

1. A 1,5-diazabicyclo[3.3.0]octadienedione having a formula selected from the group consisting of:


(I)


(II)


(III)


(IV)

wherein R is independently branched or straight chain C_1–C_4 alkyl; R_1 is independently branched or straight chain C_1–C_4

alkyl, phenyl or halo; R_2 is independently branched or straight chain C_1–C_{17} alkyl wherein at least one R_2 group has a bromo substituent on the carbon atom adjacent to the ring; and X is branched or straight chain C_1–C_{17} alkylidene wherein the ring carbon and the quarternary nitrogen are attached to the same carbon atom.

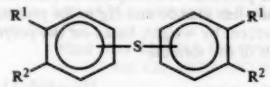
4,499,285

SOLVENT FREE PREPARATION OF DIARYLTHIOETHERS

Thomas L. Evans, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1982, Ser. No. 437,937
Int. Cl.³ C07D *209/48, 307/89*
U.S. Cl. 548—461 **14 Claims**

1. A method for making diarylthioethers of the formula



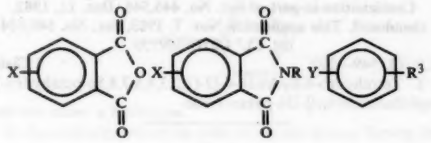
which comprises:

(a) heating a mixture of an anhydrous sulfide compound selected from the group consisting of alkali-metal sulfides of the formula

and alkali metal hydrogen sulfides of the formula

MHS

and a member selected from a group consisting of molten substituted aromatic compounds of the formulas

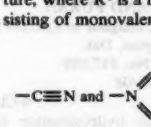


in the presence of a catalytic quantity of phase transfer catalyst selected from a group consisting of phosphonium salts of the formula

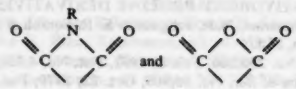
$$P(R^4)_4{}^+Q^-$$

and ammonium salts of the formula $N(R^5)_4{}^+Q^-$ and 18-crown-6 to a temperature within the range 140° C. to 240° C. in a nitrogen atmosphere in the absence of a solvent medium for a period ranging from 5 to 18 hours; and

(b) recovering the diarylthioether product from said mixture, where R^1 is a member selected from the group consisting of monovalent radicals of the formulas

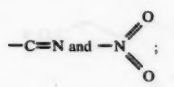


and R^2 is a hydrogen atom or R^1 and R^2 together define a divalent radical of a formula selected from the group consisting of



which form a cyclic structure with the phenyl group, where R is a monovalent radical selected from the group consisting of C_{1-8} alkyl radicals and C_{6-20} aromatic radicals;

R^3 is a member of a group of monovalent radicals of the formulas



R^4 is a monovalent radical selected from the group consisting of C_{1-16} alkyl radicals and C_{6-13} aromatic radicals;

R^5 is a monovalent radical selected from the group C_{1-16} alkyl radicals;

X is a monovalent radical selected from the group consisting of chloro, fluoro, bromo, iodo and nitro;

Y is a monovalent radical selected from the group consisting of fluoro, bromo, iodo, and chloro;

Q is a halogen ion selected from the group consisting of bromide and chloride; and

M is an alkali metal selected from the group sodium, lithium and potassium.

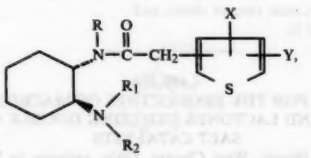
4,499,286

DERIVATIVES OF THIENYLACETIC ACID AMIDES AND THEIR PHARMACEUTICALLY ACCEPTABLE ACID SALTS AND A PROCESS FOR THE PREPARATION THEREOF

Dieter Binder, Vienna, Austria, assignor to Leavoson-Gesellschaft m.b.H. & Co. KG, Linz, Austria

Filed Nov. 22, 1983, Ser. No. 554,416
Claims priority, application Austria, Nov. 26, 1982, 4308/82
Int. Cl.³ C07C *103/82;* **A61K** *31/38*
U.S. Cl. 548—527 **4 Claims**

1. A thienylacetic acid amide of the general formula



(I)

in which the two nitrogens on the cyclohexane ring are transconnected, the basic acetic acid amide radical is in position 2 or 3 of the thiophene nucleus, R is C_1–C_3 alkyl, R_1 and R_2 are independently C_1–C_3-alkyl or represent together with the nitrogen atom to which they are attached a pyrrolidine or piperidine ring and X and Y are independently hydrogen, chlorine or bromine in position 2 to 5 of the thiophene nucleus in dependence on the position of the basic acetic acid amide group, and their pharmaceutically acceptable acid addition salts.

4,499,287

CERTAIN-4-HYDROXY-PROLINE DERIVATIVES

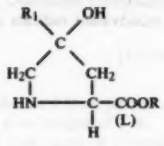
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 230,206, Feb. 2, 1981, Pat. No. 4,356,182, which is a division of Ser. No. 86,905, Oct. 22, 1979, Pat. No. 4,291,040. This application Jul. 29, 1982, Ser. No. 403,194

Int. Cl.³ C07D *207/16, 401/04*

U.S. Cl. 548—532 3 Claims

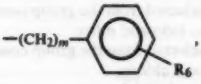
1. A compound of the formula



wherein

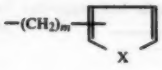
R is hydrogen or lower alkyl;

R_1 is lower alkyl, lower alkenyl, lower alkynyl,

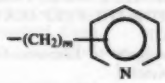


—$(CH_2)_m$-cycloalkyl

wherein said cycloalkyl ring is of 3 to 7 carbons, α-naphthyl, β-naphthyl,



wherein said —$(CH_2)_m$-bridge is attached to an available carbon atom, or



wherein said —$(CH_2)_m$-bridge is attached to an available carbon atom;

R_6 is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, bromo, trifluoromethyl or hydroxy;

m is zero, one, two or three; and

X is O or S.

4,499,288

PROCESS FOR THE PRODUCTION OF MACROCYCLIC ESTERS AND LACTONES UTILIZING DOUBLE METAL SALT CATALYSTS

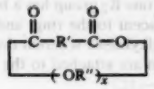
Eugene G. Harris, West Chester, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

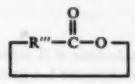
Continuation-in-part of Ser. No. 285,727, Jul. 22, 1981, Pat. No. 4,393,223, which is a continuation-in-part of Ser. No. 073,755, Sep. 10, 1979, abandoned. This application Jun. 6, 1983, Ser. No. 501,721

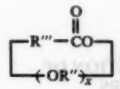
Int. Cl.³ C07D *313/00, 313/18, 321/04, 321/08, 321/12, 321/00, 323/00*

U.S. Cl. 549—266 20 Claims

1. A process for the production of macrocyclic compounds having 8 to 20 carbon atoms in the ring and selected from the group consisting of







where R' is a bivalent aliphatic hydrocarbon radical having 1 to 16 carbon atoms, R'' is a saturated bivalent aliphatic hydrocarbon radical having from 2 to 12 carbon atoms, R''' is a bivalent aliphatic hydrocarbon radical having from 6 to 18 carbon atoms and x is an integer from 1 to 4, by thermal depolymerization of the corresponding linear polyester which comprises heating the polyester at a temperature from 200° C. to 400° C. and pressure less than 50 mm Hg in the presence of 0.01 percent to 20 percent by weight, based on the polyester, of a double metal salt of the formula

$$AlM_a(OC_mH_{2m}R_1)_b(OOCR_2)_c$$

where M is lithium, sodium or potassium, R_1 is hydrogen or an alkoxy or polyalkoxy radical having from 1 to 16 carbon atoms, R_2 is a $C_{2\text{-}22}$ alkyl, phenyl or substituted-phenyl having 7 to 20 carbon atoms, m is an integer from 1 to 22, a is an integer from 1 to 3, b and c are integers from 0 to 6 and b+c=a+3.

4,499,289

OCTAHYDRONAPTHALENES

John S. Baran, Winnetka, and Chi-Dean Liang, Glenview, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 446,546, Dec. 12, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,534

Int. Cl.³ C07D *309/30*

U.S. Cl. 549—292 1 Claim

1. Tetrahydro-4-hydroxy-6-[2-(1,2,3,4,6,7,8,8α-octahydro-1-naphthalene)ethyl]-2H-pyran-2-one.

4,499,290

CAGED COMPOUNDS AND THEIR SYNTHESIS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 24, 1983, Ser. No. 544,517

Int. Cl.³ C07D *313/20*

U.S. Cl. 549—354 2 Claims

1. 10-oxatetracyclo[4.2.1.$2^{3,8}$.$0^{2,5}$]undecane or its lower alkyl-substituted congeners.

4,499,291

PROCESS FOR SIMULTANEOUS HYDROGENATION OF 2-BUTYNE-1,4-DIOL AND FURAN

Richard E. Ernst, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 27, 1983, Ser. No. 517,589

Int. Cl.³ C07D *307/08*

U.S. Cl. 549—429 4 Claims

1. A process for the simultaneous hydrogenation of 2-butyne-1,4-diol to 1,4-butanediol and furan to tetrahydrofuran, the process comprising

(a) simultaneously bringing furan and an aqueous solution of 2-butyne-1,4-diol into contact, in a reaction zone, with

(1) a hydrogenation catalyst, and
(2) hydrogen under pressure, while maintaining the reaction mass at a temperature of 60°–150° C., and
(b) withdrawing from the reaction zone a solution of tetrahydrofuran, 1,4-butanediol and water.

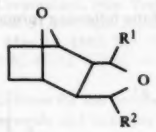
4,499,292

7-OXABICYCLOHEPTANE PROSTAGLANDIN INTERMEDIATES AND METHOD FOR PREPARING SAME

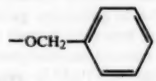
Peter W. Sprague, Pennington, and James E. Heikes, East Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 13, 1983, Ser. No. 494,233
Int. Cl.³ C07D *307/88*
U.S. Cl. 549—459 **15 Claims**

1. A compound having the structure

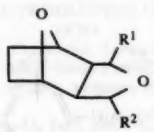


wherein one of R^1 and R^2 is

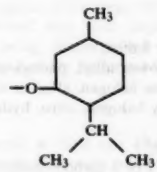


and the other is hydrogen.

8. An optically active cis endo or cis exo isomer having the structure



wherein one of R^1 and R^2 is



and the other is hydrogen.

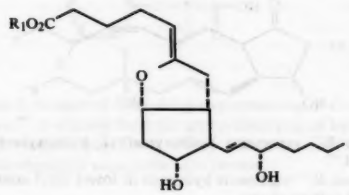
4,499,293

PGI_2 SALTS

Roy A. Johnson, Kalamazoo; Frank H. Lincoln, Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 725,550, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,770, Aug. 23, 1976, abandoned. This application Jul. 28, 1977, Ser. No. 819,940
The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.
Int. Cl.³ C07D *307/935*
U.S. Cl. 549—465 **1 Claim**

1. A compound of the formula



wherein R_1 is a pharmacologically acceptable cation.

4,499,294

PROCESS FOR PRODUCTION OF METHYL 2-TETRADECYLGYCIDATE

Cynthia A. Maryanoff, New Hope, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Jan. 21, 1983, Ser. No. 459,750
Int. Cl.³ C07D *301/02*
U.S. Cl. 549—519 **5 Claims**

1. A process for producing methyl 2-tetradecylglycidate by reacting methyl α-chloropalmitate with lithium methoxide in the presence of formaldehyde in a dipolar aprotic solvent in which all the above reactants are soluble.

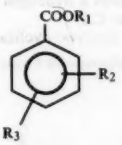
4,499,295

PROTEASE INHIBITORS

Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed May 9, 1983, Ser. No. 492,842
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—53 **16 Claims**

1. A method of preventing or reducing the degradation of natural tissues in mammals by proteases which comprises administering an effective amount of the compound of the formula:



wherein R_1 is:
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms, inclusive;
wherein R_2 is:
(a) hydroxy; or
(b) alkoxy of 1 to 6 carbon atoms, inclusive;
wherein R_3 is:
(a) —C(O)R_4;
(b) —CH(OH)R_4;

(c) $-CH_2R_4$; or
(d) $-CH{=}CHR_4$;
wherein R_4 is alkyl of 13 to 25 carbon atoms inclusive or the pharmacologically acceptable addition salts thereof.

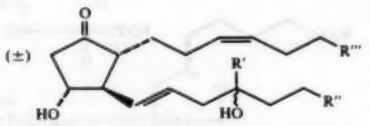
4,499,296

OMEGA CYCLOALKYL PROSTAGLANDINS

Paul W. Collins, Deerfield, and Alan F. Gasiecki, Vernon Hills, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Nov. 14, 1983, Ser. No. 551,238
Int. Cl.³ C07C *177/00*; A61K *31/557*
U.S. Cl. 560—118 **6 Claims**

1. A Compound of the formula



wherein R''' represents hydroxymethyl, hydroxyacetyl, or $-CO_2R''''$
wherein R'''' represents hydrogen or lower alkyl containing 1–6 carbon atoms;
R' represents lower alkyl containing 1 to 6 carbon atoms, vinyl or ethynyl;
R'' represents cycloalkyl containing 3 to 5 carbon atoms; and
the wavy line represents optional R,S stereochemistry

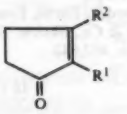
4,499,297

PROCESS FOR THE PREPARATION OF ALKYLATED CYCLOPENTENONES

Valentin Rautenstrauch, Bernex, Switzerland, assignor to Firmenich, SA, Geneva, Switzerland

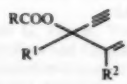
Filed Nov. 16, 1983, Ser. No. 552,462
Claims priority, application Switzerland, Dec. 6, 1982, 7075/82
Int. Cl.³ C07C *45/48*, *69/145*
U.S. Cl. 560—231 **12 Claims**

1. A process for the preparation of a cyclopentenone having formula



(I)

wherein each of symbols R^1 and R^2, when taken separately, represents an alkyl radical of C_1 to C_6, or a hydrogen atom, or, when taken together, they represent a polymethylene, or one of them designates a hydrogen atom and the other an alkyl radical of C_1 to C_6,
which consists in the catalytic cyclization of an ester having formula



(II)

wherein R^1 and R^2 are defined as above and R stands for a C_1 to C_6 alkyl radical or a phenyl group,
in the presence of a metallo-organic compound of formula

$$MeX_2(R^3CN)_2 \quad \text{(III)}$$

wherein Me represents palladium or platinum, R^3 represents a C_1 to C_3 alkyl radical or a phenyl group and X defines a halogen atom, at a temperature of between about 50° and 100° C., and in isolating the desired cyclopentenone from the reaction mixture.

4,499,298

PROCESS FOR THE PRODUCTION OF ESTERS

John A. Scheben, Erlanger, Ky., and James A. Hinnenkamp, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 801,283, May 27, 1977, abandoned.
This application Dec. 20, 1979, Ser. No. 105,444
Int. Cl.³ C07C *67/00*, *69/007*, *69/157*, *67/055*
U.S. Cl. 560—241 **8 Claims**

1. A process for the preparation of benzyl esters which comprises reacting toluene with a carboxylic acid and oxygen in the liquid phase in the presence of a catalytically effective amount of a supported catalyst consisting essentially of palladium metal, gold metal and a metal of Group VA of the Periodic Table of Elements.

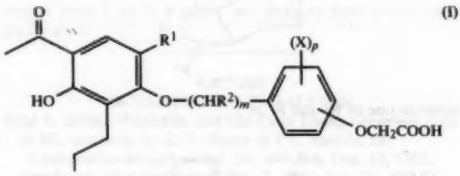
4,499,299

PHARMACEUTICALLY ACTIVE PHENYLCARBOXYLIC ACID DERIVATIVES

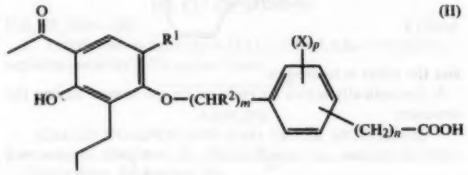
Peter R. Bernstein, and Alvin K. Willard, both of Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

Filed Dec. 6, 1982, Ser. No. 447,467
Claims priority, application United Kingdom, Dec. 30, 1981, 8139027
Int. Cl.³ C07C *65/40*
U.S. Cl. 514—570 **14 Claims**

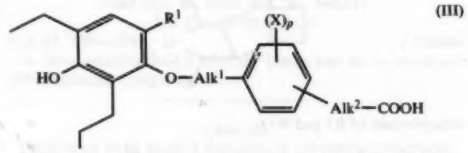
1. A compound of the following formula (I); (II) or (III):



(I)



(II)



(III)

wherein
R^1 is hydrogen or iodine;
R^2 is hydrogen, lower alkyl, phenyl or phenyl substituted with one to three halogen, alkyl or alkoxy groups;
X is independently halogen, nitro, hydroxy, lower alkyl or lower alkoxy;
Alk^1 is methylene;
Alk^2 is alkenyl of 2 or 3 carbon atoms;
m is 1;
n is 0 or 1; and

p is 0, 1 or 2

or a pharmaceutically acceptable base-addition salt thereof.

4,499,300

4-VINYLBENZENEACETIC ACID

Thomas P. Malloy, Lake Zurich, and Dusan J. Engel, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 27, 1983, Ser. No. 566,007
Int. Cl.[3] C07C 63/64
U.S. Cl. 562—495 8 Claims

1. A method of preparing 4-vinylbenzeneacetic acid comprising oxidizing 1,4-diethylbenzene in the presence of cobalt (II) compounds selected from the group consisting of cobalt phthalocyanine, cobalt salts of carboxylic acids, and cobalt salts of sulfonic acids, converting the resulting 4-ethylacetophenone to 4-ethylbenzeneacetic acid using sulfur and morpholine followed by base, photochlorinating the 4-ethylbenzeneacetic acid to 4-(1'-chloroethyl)benzeneacetic acid, dehydrochlorinating said 4-(1'chloroethyl)benzeneacetic acid with a base, and recovering the 4-vinylbenzeneacetic acid formed thereby.

4,499,301

PROCESS FOR THE PREPARATION OF UNSATURATED ALDEHYDES AND CARBOXYLIC ACIDS

Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 31,819, Apr. 20, 1979, abandoned. This application May 14, 1982, Ser. No. 378,294
Int. Cl.[3] C07C 45/35, 47/22, 51/25, 57/05
U.S. Cl. 562—546 8 Claims

1. A vapor phase process for the preparation of unsaturated aldehydes, carboxylic acids and mixtures thereof which comprises contacting a gaseous mixture of an open-chain olefin of from 3 to 8 carbon atoms, water and oxygen at an elevated temperature up to about 250° C. with a solid catalyst consisting essentially of a catalytically effective amount of noble metal selected from the group consisting of palladium, gold, silver, copper and mixtures thereof promoted by a solid acid consisting of a mixture of molybdenum trioxide and titanium dioxide wherein the atomic ratio of Mo/(Ti+Mo) is between about 0.4 and 0.8.

4,499,302

PROCESS FOR THE PRODUCTION OF METHACRYLIC ACID

Luciano Moreschini, Pordenone; Leonardo Dalloro, Bollate; Enrico Cavaterra, Milan; Guido Petrini, Milan, and Romano Covini, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Feb. 11, 1980, Ser. No. 120,397
Int. Cl.[3] C07C 51/377, 57/05
U.S. Cl. 562—599 1 Claim

1. Process for the production of methacrylic acid by an oxidative dehydrogenation, at between 340° and 440° C., of the corresponding saturated acid with oxygen in the gaseous phase, the process being characterized in that the catalyst consists of a compound of the empirical formula:

$$FeP_xMe_yMe'_tO_z$$

wherein Me represents at least one alkali or alkaline earth element, Me' represents zirconium, x is between 0.2 and 15, y is between 0.01 and 2, t is between 0.01 and 5 and z is such as to satisfy the valencies of the other elements.

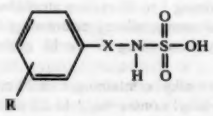
4,499,303

ANTIHYPERLIPIDEMIC N-BENZOYLSULFAMATES, N-BENZYLSULFAMATES AND BENZYLSULFONAMIDES

Steven D. Wyrick, Durham; Iris H. Hall, and Agnes Dubey, both of Chapel Hill, all of N.C., assignors to Research Corporation, New York, N.Y.

Filed Sep. 27, 1983, Ser. No. 536,218.
Int. Cl.[3] C07C 143/74, 143/78
U.S. Cl. 514—605 16 Claims

1. A compound selected from the group consisting of those of the formula:



(I)

wherein X is selected from the group consisting of C=O and CH_2 and R is selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy and lower acyl and the pharmacologically acceptable salts thereof.

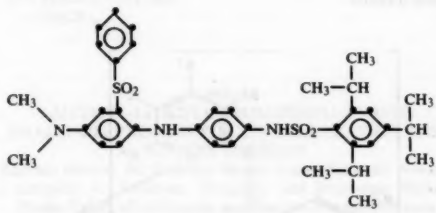
4,499,304

COLOR-FORMING SULFONAMIDODIPHENYLAMINES AND CORRESPONDING SULFONIMIDE DYES

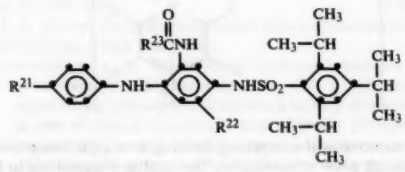
Rolf S. Gabrielsen, Webster; Patricia A. Graham, Williamson; James E. Klijanowicz, Pittsford, and Max H. Stern, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 280,627, Jul. 6, 1981, abandoned. This application Jun. 8, 1982, Ser. No. 386,457
Int. Cl.[3] C07C 143/79; C09B 49/04
U.S. Cl. 564—92 6 Claims

1. A color-forming sulfonamidodiphenylamine which is represented by the formula:



2. A color-forming para-sulfonamidodiphenylamine represented by the formula:



wherein:

R^{21} is alkoxy containing 1 to 20 carbon atoms or

R^{22} is hydrogen or

R^{23} is alkyl containing 1 to 20 carbon atoms, aryl containing 6 to 12 carbon atoms, alkoxy containing 1 to 4 carbon atoms, aryloxy containing 6 to 12 carbon atoms or NH—R^{27};

R^{24} is hydrogen or alkyl containing 1 to 20 carbon atoms;

R^{25} is hydrogen, alkyl containing 1 to 20 carbon atoms, or aryl containing 6 to 15 carbon atoms;

R^{26} is alkyl containing 1 to 20 carbon atoms, cycloalkyl containing 5 to 20 carbon atoms, or aryl containing 6 to 12 carbon atoms, alkoxy containing 1 to 4 carbon atoms, aryloxy containing 6 to 12 carbon atoms or NH—R^{28};

R^{27} is alkyl containing 1 to 20 carbon atoms, aryl containing 6 to 12 carbon atoms, alkoxy containing 1 to 4 carbon atoms, or aryloxy containing 6 to 12 carbon atoms; and

R^{28} is alkyl containing 1 to 20 carbon atoms, aryl containing 6 to 12 carbon atoms, alkoxy containing 1 to 4 carbon atoms, or aryloxy containing 6 to 12 carbon atoms.

4,499,305

PROCESS FOR PREPARATION OF CYCLOHEXYL HYDROPEROXIDE DECOMPOSITION CATALYSTS

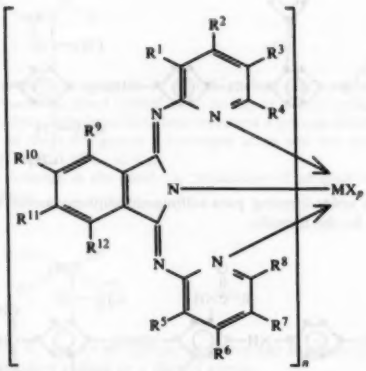
Joshua Hermolin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 11, 1983, Ser. No. 483,664

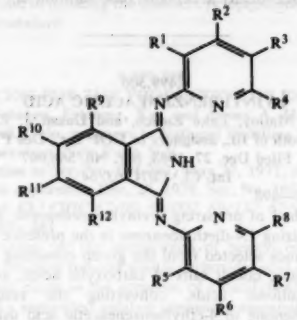
Int. Cl.³ C07C *45/53*

U.S. Cl. 568—342 **18 Claims**

1. In a process for producing a mixture containing cyclohexanol and cyclohexanone, wherein cyclohexyl hydroperoxide is decomposed in a reaction mixture comprising cyclohexane and a catalytic amount of a catalyst composition consisting essentially of at least one transition metal complex having the structural formula



the improvement comprising forming a catalyst composition feedstock prior to introducing the catalyst composition to the reaction mixture, wherein said feedstock is a stable dispersion formed by mixing a 1,3-bis(2-pyridylimino)isoindoline ligand having the structural formula



with a metal salt of formula MX_2 or MX_3 in a catalyst dispersing liquid selected from the group consisting of

(a) cyclohexanol;

(b) cyclohexanone;

(c) a mixture of cyclohexanol, cyclohexanone, and from 0–50% cyclohexane; and

(d) a plant process mixture (SDKA) obtained by steam distillation of cyclohexyl hydroperoxide decomposition reactor product, said mixture consisting essentially of cyclohexanone, cyclohexanol, water, dicylohexyl peroxide, dicyclohexyl ether, and cyclohexyl hydroperoxide; wherein

the primary ligand is the entity in brackets;

M is Co, Mn or Fe;

R^1, R^2, R^3, R^5, R^6 and, R^7 are independently hydrogen, lower alkyl, lower alkoxy, lower alkoxyalkyi, phenyl, benzyl, or phenethyl, or any two adjacent members of R^1 through R^3 and R^6 through R^7 can jointly be four CH entities of a benzene ring fused to the pyridine ring;

R^4 and R^8 are hydrogen or methyl;

R^9, R^{10}, R^{11} and R^{12} are independently hydrogen, lower alkyl, lower alkoxy, lower alkoxyalkyl or any two adjacent members or R^9 through R^{12} can jointly be four CH entities of a benzene ring fused to the benzene ring of the isoindoline moiety;

X is an ancillary anionic ligand;

n is 1 or 2; and

p is 0, 1 or 2, provided that n=p is 2 or 3; with the proviso that when there are two primary ligand, the values of R^1 through R^{12} can be different for each ligand and when there are two ancillary anionic ligands, the value of X can be different.

4,499,306

2,2-DIHALO-6-HALO-6-(1-HALOISOBUTYL)CYCLOHEXANONE

Naoshi Imaki, Atsugi, and Takemi Nakanome, Sagamihara, both of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

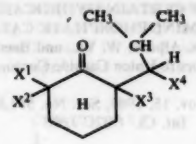
Filed Mar. 16, 1983, Ser. No. 475,946

Claims priority, application Japan, Apr. 7, 1982, 57-57546

Int. Cl.³ C07C *45/63*

U.S. Cl. 568—348 **5 Claims**

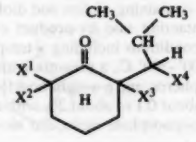
1. A 2,2-dihalo-6-halo-6-(1-haloisobutyl)cyclohexanone represented by the formula



(I)

where each of X^1, X^2, X^3 and X^4 is a halogen atom.

3. A process for preparing a 2,2-dihalo-6-halo-6-(1-haloisobutyl)cyclohexanone represented by the formula:



(I)

wherein each of X^1, X^2, X^3 and X^4 is a halogen, which comprises: reacting 2-isobutylidene cyclohexanone with from 3 to 6 moles of a halogen per mole of 2-isobutylidene cyclohexanone in the presence of a catalyst selected from the group consisting of a teritary amine, an organic phosphine and an organic phosphine oxide.

4,499,307

PROCESS FOR PREPARING 4,4A,5,6-TETRAHYDRO-7-METHYL-2-(3H)-NAPHTHALENONE, INTERMEDIATES USED IN SAID PROCESS AND NOVEL CRYSTALLINE FORM OF SAME

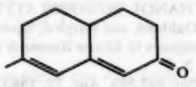
Alan O. Pittet, Atlantic Highlands; Ranya Muralidhara, Fair Haven, and Myrna L. Hagedorn, Edison, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 482,902, Apr. 7, 1983, abandoned, which is a division of Ser. No. 368,640, Apr. 15, 1982, , which is a continuation-in-part of Ser. No. 354,111, Mar. 2, 1982, abandoned. This application Feb. 23, 1984, Ser. No. 582,755

Int. Cl.³ C07C *45/41*

U.S. Cl. 568—355 **4 Claims**

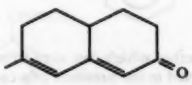
1. A process for preparing 4,4A,5,6-tetrahydro-7-methyl-2-(3H)-naphthalenone having the structure:



comprising the steps of:

(i) reacting about 2 moles of formaldehyde with about 3 moles of an acetoacetic ester to form a polycarboxylic acid ester in the presence of base at a reaction temperature in the range of from 95° C. up to 110° C. and for a reaction time of from 1 hour up to 4 hours; and then

(ii) decarboxylating the resulting polycarboxylic acid ester to form the compound defined according to the structure:



by means of the acetification of the reaction mass using a protonic acid for a reaction time of about 5 hours at a temperature between 85° C. and 105° C., the equivalent ratio of polycarboxylic acid ester:protonic acid being about 1:1.

4,499,308

CATALYTIC REACTION OF ACROLEIN AND METHACROLEIN WITH ALCOHOLS AND GLYCOLS

Christos Paparizos, Willowick; Robert S. Shout, Bedford, and Wilfrid G. Shaw, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 5, 1983, Ser. No. 557,777

Int. Cl.³ C07C *45/64*

U.S. Cl. 568—465 **9 Claims**

1. A method comprising reacting acrolein or methacrolein with a C_1 to C_{12} mono- or a C_1 to C_5 dihydroxyalkane to produce a 3-alkoxypropionaldehyde or a 3-(hydroxyalkoxy)-propionaldehyde in the case of acrolein; or to produce a 3-alkoxy-2-methylpropionaldehyde or a 3-(hydroxyalkoxy)-2-methylpropionaldehyde in the case of methacrolein, by contacting a mixture of the recited reactants with a particulate solid metallic catalyst comprising an alloy of palladium and cadmium in the temperature range from zero to 100° C.

4,499,309

DERIVATIVES OF ENERGETIC ORTHOFORMATES

Michael E. Sitzmann, Adelphi, and William H. Gilligan, Fort Washington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1983, Ser. No. 467,715

Int. Cl.³ C07C *43/32*

U.S. Cl. 568—590 **6 Claims**

1. A fluoroorthoformate of the formula

wherein R is selected from the group consisting of

$-CH_2CF(NO_2)_2$,

$-CH_2CF_2(NO_2)$, and

$-CH_2CF_3$.

4,499,310

5-METHYL-1-(TRIFLUOROMETHYL)-2-NAPHTHALENOL, PROCESS FOR ITS PREPARATION AND ETHERS THEREOF

Kazimir Sestanj, St. Laurent; Steven Fung, Montreal; Nedumparambil A. Abraham, Ormeaux, and Francesco Bellini, Mount Royal, all of Canada, assignors to Ayerst, McKenna & Harrison, Inc., Montreal, Canada

Division of Ser. No. 321,302, Nov. 13, 1981, Pat. No. 4,408,077. This application Jun. 22, 1983, Ser. No. 506,740

Int. Cl.³ C07C *39/14, 37/06, 43/20*

U.S. Cl. 568—634 **3 Claims**

1. A process for preparing 5-methyl-1-(trifluoromethyl)-2-naphthalenol, which comprises:

aromatizing 3,4-dihydro-1-hydroxy-5-methyl-1-(trifluoromethyl)-2(1H)-naphthalenone with a dehydrating agent of the type capable of acylating tertiary alkanols and is one of thionyl bromide, thionyl chloride, phosphorus oxychloride, acetyl chloride, mesyl chloride or acetyl chloride in the presence of an organic proton acceptor, or trifluoroacetic anhydride or acetic anhydride.

2. 5-Methyl-1-(trifluoromethyl)-2-naphthalenol and its corresponding lower alkyl ethers.

4,499,311

WATER SOLUBLE RESOLS AND METHOD FOR PRODUCING THEM

Clifford L. Spiro, Schenectady, and Edward J. Lamby, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,134
Int. Cl.³ C07C 41/01
U.S. Cl. 568—660 10 Claims

1. A method for producing water soluble resols useful for recovering crude oil, comprising reacting the effluent stream of a process for producing bisphenol - A with an aldehyde in the presence of a compound for releasing hydroxide ions in water at a temperature not to exceed 100° C.

4,499,312

COMPLEX FORMED TO SEPARATE 3,5-XYLENOL OR 3,4-XYLENOL FROM OTHER POLYMETHYLATED PHENOLIC COMPOUNDS

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 431,651, Sep. 30, 1984, Pat. No. 4,447,658. This application Feb. 21, 1984, Ser. No. 582,082
Int. Cl.³ C07C 39/06
U.S. Cl. 568—780 2 Claims

1. A complex consisting essentially of 3,5-xylenol and calcium bromide.

4,499,313

PROCESS FOR HYDRATION OF OLEFINS

Yoshiharu Okumura, Tokyo; Setsuo Kamiyama; Toshihiro Hosokawa, and Katsumi Kaneko, all of Saitama, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1984, Ser. No. 605,574
Claims priority, application Japan, May 31, 1983, 58-94893
Int. Cl.³ C07C 29/04, 31/10, 31/12, 31/135
U.S. Cl. 568—897 14 Claims

1. An improved process for producing an alcohol by hydrating an olefin, wherein the improvement comprises hydrating an olefin in the presence of hydrogen-type mordenite or hydrogen-type zeolite Y as a catalyst each having a silica/alumina molar ratio of 20 to 500.

4,499,314

METHANOL CONVERSION TO HYDROCARBONS WITH ZEOLITES AND COCATALYSTS

Duncan Seddon; Thomas Mole, and Judy A. Whiteside, all of Victoria, Australia, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 367,237, Mar. 31, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 605,166
Int. Cl.³ C07C 1/30
U.S. Cl. 585—408 14 Claims

1. A process for producing hydrocarbons comprising feeding, under conversion conditions, a charge comprising methanol to a catalyst comprising a crystalline zeolite which has an aluminium content in the range of 0 to 4% w/w, and which is hydrothermally stable in the temperature range of from 250° C. to 500° C. and is capable of converting methanol to hydrocarbons, to form a mixture comprising light olefins, lower alkanes and monocyclic aromatic hydrocarbons and recovering said hydrocarbons; characterized in that the charge consists essentially of water, methanol, in a weight/weight ratio in the range of from 1:5 to 5:1, and a promoter comprising one or more compounds selected from the group consisting of aromatic hydrocarbons wherein the zeolite has a channel size such as to permit sorption and diffusion of the promoter; and wherein the weight/weight ratio of promoter to methanol is in the range of from 0.0001:1 to 1:1, and further characterized in that the charge is substantially free of dimethyl ether.

4,499,315

CONVERSION OF CERTAIN HYDROCARBONS USING SILICOALUMINOPHOSPHATE CATALYSTS

Daniel C. Garska, St. Albans, W. Va., and Brent M. Lok, New City, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 15, 1983, Ser. No. 551,887
Int. Cl.³ C07C 3/00
U.S. Cl. 585—415 15 Claims

1. A low severity process for the preparation of a benzene-toluene-xylenes enriched stream containing minimal monoolefin and diolefin content, from a feed stream comprising a by-product effluent of a process for the pyrolitic cracking of hydrocarbons to produce light olefins or diolefins, said by-product effluent stream containing olefins and diolefins, said process comprising contacting said by-product effluent stream, under low severity conditions including a temperature within the range of about 300°–700° C., a pressure within the range of about 0 to 100 atmospheres, and a weight hourly space velocity within the range of about 0.1 to about 20, with a catalyst comprising a silicoaluminophosphate molecular sieve.

4,499,316

CONVERSION OF EFFLUENT HYDROCARBONS STREAMS USING ALUMINOPHOSPHATE CATALYSTS

Daniel C. Garska, Saint Albans, and Cyril B. Tellis, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 4, 1984, Ser. No. 596,598
Int. Cl.³ C07C 3/10, 3/20
U.S. Cl. 585—415 14 Claims

1. A low severity process for the preparation of a benzene-toluene-xylenes enriched stream containing minimal monoolefin and diolefin content, from a feed stream comprising a by-product effluent of a process for the pyrolitic cracking of hydrocarbons to produce light olefins or diolefins, said by-product effluent stream containing olefins and diolefins, said process comprising contacting said by-product effluent stream, under low severity conditions including a temperature within the range of about 300°–700° C., a pressure within the range of about 0 to 100 atmospheres, and a weight hourly space velocity within the range of about 0.1 to about 20, with a catalyst comprising at least one aluminophosphate molecular sieve.

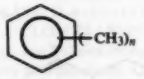
4,499,317

MODIFIED ZEOLITE CATALYST COMPOSITION AND PROCESS FOR ALKYLATING TOLUENE WITH METHANOL TO FORM STYRENE

Huei-Cheng Liu, Oakland, and Ralph J. Spohn, Woodcliff Lake, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 487,585, Apr. 22, 1983,. This application Jul. 2, 1984, Ser. No. 627,339
Int. Cl.³ C07C 1/20
U.S. Cl. 585—438 21 Claims

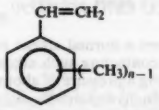
1. A process for alkylating toluene or toluene derivative with at least one alkylating agent which comprises reacting said alkylating agent with at least one compound represented by the structural formula:



(I)

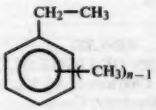
wherein n is a number which can vary from 1 to 6, said reaction being conducted in the presence of a catalyst composition comprising a crystalline aluminosilicate zeolite of the faujasite structure with a SiO_2:Al_2O_3 mole ratio of from about 2 to about 8 and having present therein (1) at least one alkali metal selected from the group consisting of Cs, K, and Rb; (2) at least

one metal selected from the Group of M metals consisting of Mn, Fe, Cu, and Zn; and (3) at least one member selected from the group consisting of boron and phosphorus in a manner and under conditions sufficient to form a product comprising at least one compound represented by the structural formulae:



(II)

and



(III)

wherein n is a number which corresponds in value to that employed for n in structural formula I.

4,499,318

MODIFIED ZEOLITE CATALYST COMPOSITION AND PROCESS FOR ALKYLATING TOLUENE WITH METHANOL TO FORM STYRENE

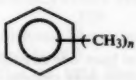
Huei-Cheng Liu, Oakland, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 487,586, Apr. 22, 1983,. This application Jul. 2, 1984, Ser. No. 627,340

Int. Cl.³ C07C *1/20*

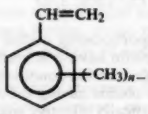
U.S. Cl. 585—438 **21 Claims**

1. A process for alkylating toluene or toluene derivative with at least one alkylating agent which comprises reacting said alkylating agent with at least one compound represented by the structural formula:



(I)

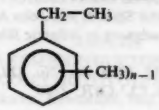
wherein n is a number which can vary from 1 to 6, said reaction being conducted in the presence of a catalyst composition comprising a crystalline aluminosilicate zeolite of the faujasite structure with a SiO_2:Al_2O_3 mole ratio of from about 2 to about 8 and having present therein (1) at least one alkali metal selected from the group consisting of Cs, K, and Rb; (2) at least one metal selected from the Group of M metals consisting of Li, Ce, Cr, and Ag; and (3) at least one member selected from the group consisting of boron and phosphorus in a manner and under conditions sufficient to form a product comprising at least one compound represented by the structural formulae:



(II)

and

-continued



(III)

wherein n is a number which corresponds in value to that employed for n in structural formula I.

4,499,319

PROTON-CATALYSED REACTIONS IN WHICH WATER IS NOT A STOICHIOMETRIC REACTANT CATALYSED BY METAL CATION-EXCHANGED LAYERED CLAYS

James A. Ballantine, West Cross; John H. Purnell, Bishopston, both of Wales, and John M. Thomas, Cambridge, England, assignors to The British Petroleum Company p.l.c., London, England

Continuation-in-part of Ser. No. 218,551, Dec. 22, 1980, abandoned. This application Sep. 9, 1982, Ser. No. 416,387

Claims priority, application United Kingdom, Dec. 22, 1979, 7944315; May 17, 1980, 8016384; Jul. 5, 1980, 8022101; Aug. 9, 1980, 8026028

Int. Cl.³ C07C *2/68*

U.S. Cl. 585—467 **15 Claims**

1. In a process for the production of an alkyl aromatic compound by reacting at elevated temperature an alkylatable aromatic hydrocarbon with an alkylating agent selected from olefins and alcohols having at least two carbon atoms, the improvement which comprises using as an essential catalyst component a cation exchanged dioctahedral layered clay selected from montmorillonites, beidellites, vermiculites and nontronite, in which clay the exchangeable cation is a metal cation.

4,499,320

ALKYLATION PROCESS EMPLOYING MAGNESIUM SILICATE COMPOSITIONS

Juan M. Garcés, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 327,870, Dec. 7, 1981,. This application Apr. 11, 1983, Ser. No. 484,112

Int. Cl.³ C07C *2/68*

U.S. Cl. 585—467 **27 Claims**

1. A process for alkylating an aromatic hydrocarbon comprising contacting an alkylating agent with an aromatic hydrocarbon under reactive conditions in the presence of a catalytic amount of a porous crystalline magnesium silicate.

4,499,321

METHOD FOR SELECTIVE DEALKYLATION OF 1,4-DIALKYLBENZENE

Hiroshi Sato; Norio Ishii, and Shyuzo Nakamura, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 21, 1984, Ser. No. 612,219

Claims priority, application Japan, May 20, 1983, 58-89570

Int. Cl.³ C07C *4/12*

U.S. Cl. 585—486 **7 Claims**

1. A method for selective dealkylation of 1,4-dialkylbenzenes comprising selectively dealkylating a 1,4-dialkylbenzene in a dialkylbenzene mixture using as a catalyst crystalline zeolite having a silica/alumina ratio of at least 12 and a constrained index of 1 to 12 which is modified with an oxide of a metal or metalloid, said crystalline zeolite being one ion-exchanged with a lithium ion.

4,499,322

METHANE CONVERSION

C. Andrew Jones, Newtown Square, and John A. Sofranko, West Chester, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 12, 1983, Ser. No. 522,937
Int. Cl.³ C07C 2/00
U.S. Cl. 585—500 26 Claims

1. In an improved method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane at synthesizing conditions with at least one reducible oxide of at least one metal which oxides when contacted with methane at synthesizing conditions are reduced and produce higher hydrocarbon products and water, the improvement which comprises conducting the contacting in the presence of a promoting amount of at least one promoter selected from the group consisting of alkali metals and compounds thereof.

4,499,323

METHANE CONVERSION

Anne M. Gaffney, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 16, 1984, Ser. No. 600,665
Int. Cl.³ C07C 2/00
U.S. Cl. 585—500 31 Claims

29. A method for converting methane to higher hydrocarbon products which comprises contacting at a temperature within the range of about 500° to 1000° C. a gas comprising methane and a solid comprising a reducible oxide of Pr and at least one member of the group consisting of alkali metals and compounds thereof.

4,499,324

METHANE CONVERSION

Anne M. Gaffney, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 16, 1984, Ser. No. 600,917
Int. Cl.³ C07C 2/00
U.S. Cl. 585—500 32 Claims

29. A method for converting methane to higher hydrocarbon products which comprises contacting at a temperature within the range of about 500° to 1000° C. a gas comprising methane and a solid comprising a reducible oxide of Ce and at least one member of the group consisting of alkali metals and compounds thereof.

4,499,325

ALKENE CONVERSION USING AMS-1B CRYSTALLINE BOROSILICATE

Marvin R. Klotz, Batavia, and Edwin F. Peters, Winfield, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 24, 1982, Ser. No. 422,743
Int. Cl.³ C07C 3/20, 5/30
U.S. Cl. 585—671 12 Claims

1. A process to convert a substantially linear alkene to isomerized products comprising contacting such alkene under conversion conditions with an AMS-1B crystalline borosilicate-based catalyst composition.

4,499,326

SELECTIVE LOW-TEMPERATURE ISOMERIZATION OF NORMAL BUTENES USING AMS-1B CRYSTALLINE BOROSILICATE MOLECULAR SIEVE

John L. Melquist, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 24, 1982, Ser. No. 422,822
Int. Cl.³ C07C 3/20, 5/30
U.S. Cl. 585—671 16 Claims

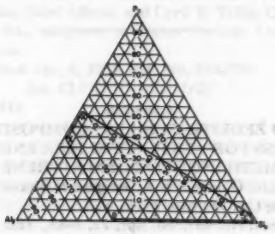
1. A process to convert a normal alkene to isomerized hydrocarbons comprising contacting such alkene under conversion conditions comprising a pressure of about 0.1 to about 100 atmospheres, a hydrogen/hydrocarbon molar ratio of 0 to about 10 and a weight hourly space velocity of about 1 to about 40 hr^{-1} with a hydrogen form AMS-1B crystalline borosilicate-based catalyst composition at a conversion temperature below 250° C.

4,499,327

PRODUCTION OF LIGHT OLEFINS

Steven W. Kaiser, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 4, 1982, Ser. No. 426,213
Int. Cl.³ C07C 1/00; B01J 27/14
U.S. Cl. 585—640 58 Claims



1. The process of making light olefins containing 2 to 4 carbon atoms which comprises contacting a feedstock comprising one or more of methanol, ethanol, dimethyl ether, diethyl ether and mixtures thereof with a silicoaluminophosphate molecular sieve wherein the silicoaluminophosphate molecular sieve comprises a microporous crystalline silicoaluminophosphate whose unit empirical formula in the as-synthesized and anhydrous form is

$$mR:(Si_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" has a value of from 0.02 to 0.3; "m" represents the moles of "R" present per mole of $(Si_xAl_yP_z)O_2$; "x", "y" and "z" represent the mole fractions of silicon, aluminum and phosphorus respectively, present as tetrahedral units, said mole fractions being such that they are within the pentagonal compositional area defined by points A, B, C, D and E of the ternary diagram which is FIG. 1 of the drawings.

4,499,328

OLEFIN METATHESIS AND CATALYST

Simon G. Kukes, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 5, 1983, Ser. No. 539,213
Int. Cl.³ C07C 3/62
U.S. Cl. 585—646 9 Claims

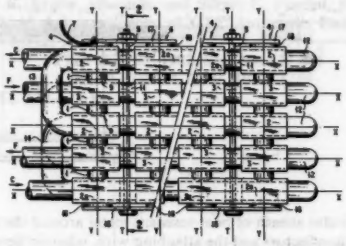
1. A process for disproportionating olefins comprising contacting at least one feed olefin having at least 3 carbon atoms per molecule under suitable reaction conditions which convert the feed olefin into other olefins having different numbers of carbon atoms with a catalytically effective amount of a catalyst composition comprising silica and tungsten oxide promoted with an effective promoting amount of silver.

4,499,329

THERMOELECTRIC INSTALLATION

Michel Benicourt, Versailles; Jean Buffet, Paris, and Jean-Francois Huard, Pont-a-Mousson, all of France, assignors to Air Industrie, Courbevoie, France

Filed Jul. 21, 1983, Ser. No. 515,972
Claims priority, application France, Mar. 17, 1983, 83 04541
Int. Cl.³ H01L *35/28*
U.S. Cl. 136—208 10 Claims



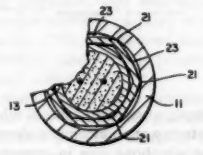
1. A thermoelectric installation comprising thermoelements mounted between heat exchangers (2–3, 102–103) provided with a hot-fluid (C) or cold-fluid (F) circulation duct (10) and alternating with the thermoelements to form stacks or columns (4) placed side by side so as to form an assembly or mounting rack in which the thermoelements are placed in parallel planes and the exchangers facing each other in the form of rows, demarcating two fluid circulation ducts, one for the hot fluid and the other for the cold fluid, the constituent elements of each column being held together by tightening means (5), characterized in that, since the hot or cold-fluid circulation ducts (10) of the exchangers are located outside the tightening axis (YY) of the stacks, the exchangers (2–3, 102–103) adjacent to one row can turn in relation to one another about the axis (XX) of their circulation duct (10), the thermoelements and the exchangers being in contact along the tightening axis (YY) of the stacks, their contacts on at least one of their surfaces having a profile that permits a rotation in relation to the axis of the circulation ducts.

4,499,330

ANTI-VIBRATION SUPPORT FOR THERMOCOUPLE TIP

Robert A. Pustell, Andover, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,668
Int. Cl.³ H01L *35/02*
U.S. Cl. 136—230 4 Claims



1. A temperature sensing probe assembly comprising:

a. a temperature sensing probe positioned in a protective housing, the tip portion of said probe extending beyond said housing,

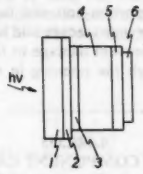
b. anti-vibration support means for the tip portion of said probe comprising at least one multi-sided sleeve positioned between the interior of said housing and the exterior of the probe whereby the sides are deformed in the assembly to make multi-point but discontinuous contact with the interior of the housing.

4,499,331

AMORPHOUS SEMICONDUCTOR AND AMORPHOUS SILICON PHOTOVOLTAIC DEVICE

Yoshihiro Hamakawa, Kawanishi, and Yoshihisa Tawada, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 399,312, Jul. 19, 1982, Pat. No. 4,450,316. This application Nov. 17, 1983, Ser. No. 552,951
Claims priority, application Japan, Jul. 17, 1981, 56-112571; Jul. 17, 1981, 56-112572
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—258 5 Claims



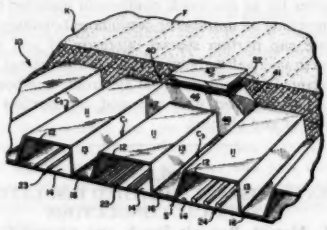
4. In an amorphous silicon derivative PIN junction photovoltaic device, the improvement wherein at least one of the P-type and N-type amorphous silicon semiconductors is an amorphous semiconductor having the general formula: $a\text{-}Si_{(1-x-y)}C_xN_y$ and an electric conductivity of not less than $10^{-8}(\Omega\cdot cm)^{-1}$.

4,499,332

PRESET BLOCK ASSEMBLY FOR UNDERFLOOR ELECTRICAL DISTRIBUTION SYSTEM

Yale R. Shea, Hales Corners, and Kevin C. Znege, West Milwaukee, both of Wis., assignors to INRYCO, Inc., Milwaukee, Wis.

Filed Sep. 28, 1982, Ser. No. 425,339
Int. Cl.³ H02G *3/12*
U.S. Cl. 174—48 18 Claims



1. A preset block assembly for providing access to the conductors of an underfloor electrical distribution system, said distribution system including at least one raceway panel adapted to be supported on a subfloor and having a plurality of elongated laterally spaced cells, each of said cells being adapted to enclose one or more of the electrical conductors of said distribution system and including a top wall spaced above said subfloor and laterally spaced side walls extending between said top wall and said subfloor, and said cells being laterally spaced from each other so as to define valleys therebetween, said block assembly comprising a housing having a terminal portion adapted to overlie the top wall of one of said cells and an opening in said top wall, said terminal portion also having a top wall and an opening in said top wall providing access to the interior thereof, said housing also having at least one depend-

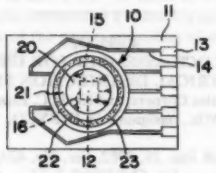
ing portion connected to one side of said terminal portion and adapted to extend into the valley between said one cell and a cell adjacent thereto, said depending portion including longitudinally spaced end wall portions and a laterally spaced, outer side wall adapted to engage the adjacent side wall of said adjacent cell, said side wall of said adjacent cell having an opening therein providing access to the electrical conductors therein, said laterally spaced outer side wall of said depending portion having an opening therein adapted to register with the opening in the side wall of said adjacent cell when said depending portion of said block assembly is seated in said valley, and combined locking and grommeting means carried by one of said side walls of said depending portion and adjacent cell, whereby said block assembly provides access to and permits connections to be made with the electrical conductors at least in said one cell and said adjacent cell through the access opening in said terminal portion and said combined locking and grommeting means serves to secure said housing at least to said adjacent cell and to prevent damage to the electrical conductors extending through the opening in the side wall of said adjacent cell.

4,499,333

ELECTRONIC COMPONENT CAP AND SEAL

Aik T. Chee, and Wee S. Kiat, both of Singapore, Singapore, assignors to Printed Circuits International, Inc., Sunnyvale, Calif.

Filed Mar. 28, 1983, Ser. No. 479,381
Int. Cl.³ H05K *5/06*
U.S. Cl. 174—52 FP **19 Claims**



1. A cover for an electronic component mounted on a substrate comprising an upstanding continuous boundary wall, an imperforate cap portion spaced interiorly of said wall and forming with said wall a continuous open-top channel, said cap portion adapted to encompass said electronic component, and means for spacing said wall and said cap portion without blocking all of said channel.

4,499,334

HEAT RESISTANT SHEATHED INSULATED ELECTRICAL CONDUCTORS

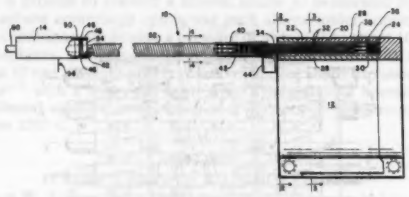
Francis L. Merritt, Redondo Beach, and Adriano C. Ducati, Corona del Mar, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 22, 1983, Ser. No. 564,547
Int. Cl.³ H01B *7/00*
U.S. Cl. 174—111 **3 Claims**

1. An electrical lead arrangement for a heater, said lead arrangement comprising:

lead conductors principally of tungsten wire wrapped with smaller diameter tungsten support wire, with the lead conductors extending from within said heater to within a transition connector, and with each lead conductor insulated individually with alumina beads for at least part of the lead arrangement between but not within the heater and the transition connector; the lead conductors being connected within the transition connector to other lead wires which extend therefrom, and within the heater to a heater wire;

support means parallel to the insulated lead conductors, said support means comprising a solid attaching wire of a material selected from the group consisting of tungsten and molybdenum, with a diameter greater than the inner diameter but smaller than the outer diameter of the alumina beads;



and an outer sheath of heat-resistant metal around the insulated conductors and the attaching wire, wherein between the heater and the transition connector the lead arrangement has an overall diameter of less than one fourth inch with some flexibility, while being protected from mechanical or heat damage;

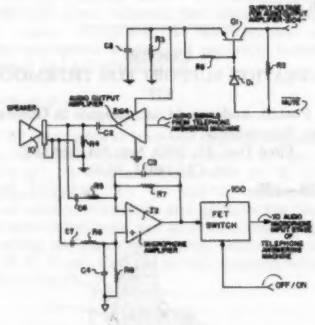
wherein said attaching wire has one end which is outside of said sheath and attached to said heater, and another end which is outside of said sheath and attached to the transition connector.

4,499,335

ANNOUNCEMENT RECORDING AND MESSAGE PLAYBACK SYSTEM FOR A TELEPHONE ANSWERING MACHINE

Stephen V. Lyle, San Pedro, Calif., assignor to T.A.D. Avanti, Inc., Compton, Calif.

Filed Jan. 14, 1983, Ser. No. 457,898
Int. Cl.³ H04M *1/21, 1/64*
U.S. Cl. 179—6.03 **7 Claims**



1. In a telephone answering system which includes a first mechanism for storing announcements therein which are transmitted over the telephone line in response to a ring signal received over the telephone line, and a second mechanism for storing dictation information and messages received over the telephone line from calling parties, a system for introducing announcement audio signals to the first mechanism to be stored therein and for introducing dictation audio signals to the second mechanism to be stored therein and for receiving message audio signals from the second mechanism to reproduce such signals, said system including: a transducer capable of transforming audio signals into sound and sound into audio signals; first circuit means for receiving audio signals from the first

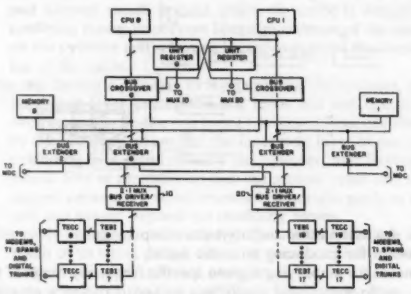
mechanism; second circuit means for introducing audio signals to the first and second mechanisms; and switching means having a first condition for effectively connecting the first circuit means to the transducer and having a second condition for connecting the transducer to the second circuit means.

4,499,336

COMMON CHANNEL INTEROFFICE SIGNALING SYSTEM

Agop K. Krikor, Glendale, and Sergio E. Puccini, Scottsdale, both of Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Oct. 29, 1982, Ser. No. 437,646
Int. Cl.³ H04M *7/06*; H04Q *3/54*
U.S. Cl. 179—18 ES **7 Claims**



1. In a telephone switching office having a switching network and a processor complex, a CCIS system comprising:

first and second pluralities of terminal equipment for transferring CCIS data to said CCIS system from remotely located switching offices and from said CCIS system to said remotely located switching offices;

first and second CPUs including an active and a ready standby CPU, each said CPU being connected to said processor complex;

first and second CPU buses connected respectively to said first and second CPUs;

first and second bus crossovers, each bus crossover connected to said first and to said second CPUs via said respective CPU buses and said crossovers operated to connect said first CPU to said second CPU bus and said second CPU to said first CPU bus;

first and second bus extenders, each bus extender connected to said first and to said second bus crossovers, said bus extenders operated to connect said first and said second plurality of terminal equipment to said active CPU;

first and second multiplexer means connected to said first and second bus extenders, said first multiplexer means operated to connect said first plurality of terminal equipment to said active CPU, said second multiplexer means operated to connect said second plurality of terminal equipment to said active CPU;

first and second pluralities of buffer interface means corresponding to said first and second pluralities of terminal equipment, said first plurality of buffer interface means connected to said first multiplexer means, said second plurality of buffer interface means connected to said second multiplexer means, each buffer interface means operated to store and to forward said CCIS data between said active CPU and said terminal equipment;

first and second pluralities of control circuits corresponding to said first and second pluralities of terminal equipment and buffer interface means, each control circuit connected between one particular buffer interface means and one particular terminal equipment and each control circuit operated to control said CCIS data transfer between said one particular buffer interface means and said one particular terminal equipment;

each said buffer interface means is cyclically operated to transmit said CCIS data, received from said connected control circuit, to said active CPU via said corresponding CPU bus; and

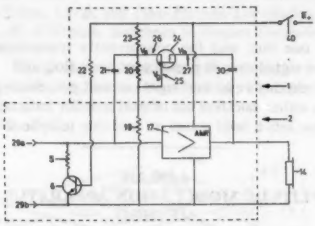
each said buffer interface means is cyclically operated to transmit said CCIS data, received from said active CPU, to said one particular terminal equipment via said connected control circuit.

4,499,337

COUPLER FOR MICROTELEPHONE SET

Jorgen F. Elbaek, Copenhagen, Denmark, assignor to Danavox A/S, Copenhagen, Denmark

Filed Aug. 3, 1982, Ser. No. 404,699
Claims priority, application Denmark, Aug. 11, 1981, 3554/81
Int. Cl.³ H04M *1/00, 19/04*
U.S. Cl. 179—27 D **2 Claims**



1. An electronic coupler for microtelephone sets (**32***a*, **32***b*, . . . **32***n*) for coupling an operator's telephone cartridge (**14**) to a telephone connection (**36**) through an operating position (**34***a*, **34***b*, . . . **34***n*) in a telephone operator's switchboard with an automatic call distributor (**35**), wherein an incoming call is signalled by coupling through an electric signal to an operator's telephone cartridge (**14**) where the signal is converted to an acoustic signal, said electronic coupler (**1**) including a field-effect transistor of the depletion mode type (**24**) having its conductor section coupled in parallel across an amplifier (**17**) and its gate (**25**) operatively coupled to a power supply terminal of the amplifier so that when power is applied to the power supply terminal of the amplifier, said transistor presents a high impedance against incoming A.C. signals in the audio frequency range presented to said amplifier and said transistor so that said signals are connected to a microtelephone set (**32***a*, **32***b*, . . . **32***n*) via the amplifier (**17**), and so that the conductor section of the transistor has low impedance against incoming A.C. signals when no power is being applied to the amplifier so that said signals by-pass the amplifier and pass through the conductor section of the transistor and are connected directly to the telephone cartridge (**14**) of the microtelephone set (**32***a*, **32***b*, . . . **32***n*).

4,499,338

KEY TELEPHONE SYSTEM SIGNALLING AND CONTROL ARRANGEMENT

David L. Wetzel, Charlottesville, Va., assignor to Northern Telecom, Ltd., Montreal, Canada

Filed Apr. 21, 1983, Ser. No. 487,295
Int. Cl.³ H04M *1/72, 1/68*
U.S. Cl. 179—99 E **3 Claims**

1. In a key telephone system having a plurality of station sets for selective connection to a plurality of telephone lines;

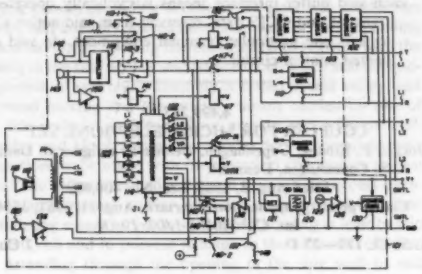
a control unit having a common control line connected to each of said station sets;

means for periodically transmitting a framing signal on said common control line from said unit;

means at one of said station sets when connected to one of

the telephone lines, for transmitting in a preselected time slot following said framing signal, a signal requesting a hold state on said one telephone line;

means at said common control unit responsive to said signal requesting a hold state, for connecting a hold network to



said one line, and for concurrently transmitting a hold status signal in said preselected time slot; and

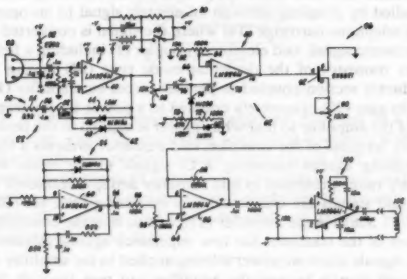
means responsive to said signal in said preselected time slot from either said one set or said unit for indicating at said station sets a hold status on said one telephone line.

4,499,339

AMPLITUDE MODULATION APPARATUS AND METHOD

Gordon L. Richard, Minco, Okla., assignor to Baptist Medical Center of Oklahoma, Inc., Oklahoma City, Okla.

Filed Nov. 24, 1982, Ser. No. 444,460
Int. Cl.³ H04R *25/00*
U.S. Cl. 179—107 FD **19 Claims**



1. An apparatus for aiding a person to detect an acoustical signal, which person is responsive to a range of electrical stimulus signal magnitudes defined by a lower stimulus detection limit and an upper stimulus tolerance limit, said apparatus comprising:

transducer means for detecting the acoustical signal and for converting the detected acoustical signal into an electrical signal;

carrier signal generating means for generating a carrier signal having a quiescent peak magnitude; and

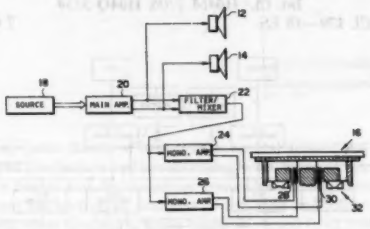
modulation means for modulating said carrier signal in response to said electrical signal so that the peak amplitude of the modulated carrier signal is variable between a minimum peak magnitude which is substantially equal to said quiescent peak magnitude and a maximum peak magnitude which is within the range of perceivable signal magnitudes defined by the lower stimulus detection limit and the upper stimulus tolerance limit.

4,499,340

SPEAKER FOR AUTOMOTIVE AUDIO SYSTEM WITH VEHICLE PANEL UTILIZED AS SOUND AMPLIFYING MEDIUM

Junichi Kasai; Takayuki Yanagishima, both of Yokosuka; Akio Ajimine, Tokyo; Yoshiaki Murakami, Tokyo; Akimitsu Shino, Tokyo, and Tatsuya Watanabe, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Clarion Co., Ltd., Tokyo, both of, Japan

Filed May 3, 1983, Ser. No. 491,293
Claims priority, application Japan, May 11, 1982, 57-78635
Int. Cl.³ H04R *9/02, 9/06*
U.S. Cl. 179—115.5 DV **8 Claims**



1. An automotive audio system comprising;

means for producing an audio signal;

means for amplifying a given specific frequency range of the audio signal, said amplifying means including a plurality of amplifiers adapted to amplify the specific frequency range of audio signals;

a speaker system including a speaker for reproducing said specific frequency range of the audio signal;

a driver unit associated with said speaker for driving a sound-amplifying medium in said speaker to reproduce said specific frequency range of the audio signal; and

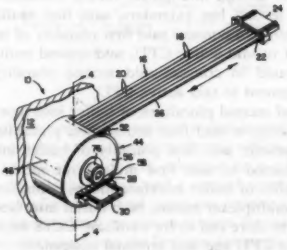
a plurality of magnetic coils incorporated in said driver unit, each of said magnetic coils being connected to a corresponding different one of the amplifiers of said amplifying means to be energized by said specific frequency range of the audio signal in unison.

4,499,341

EXTENSIBLE ELECTRICAL CABLE ASSEMBLY

James F. Boyd, Greensboro, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 22, 1982, Ser. No. 421,704
Int. Cl.³ H02G *11/02*; B65H *75/48*
U.S. Cl. 191—12.4 **13 Claims**



1. An extensible electrical cable assembly of the type comprising a cable having at least one insulated electrical conductor therein, and a support means, the cable being wrapped in a coil around a portion of the support means, the cable having a first end with a first connecting means thereon, an intermediate

portion and a second end with a second connecting means thereon, the first end being at the outer end of the coil and the second end being at the inner end of the coil, the cable being extensible upon movement of the first end of the cable away from the support means accompanied by the withdrawal of the intermediate portion of the cable from the coil, the assembly being characterized in that:

the cable is a flat ribbon-like cable comprising at least one conductor insulated by flat ribbon-like insulating material, the cable having a major cross-sectional axis and a minor cross-sectional axis, the cable being coiled with the minor axis of the cable extending radially with respect to the coil and with the major axis extending parallel to the axis of the coil,

the support means is comprised of a static cylinder having a width at least equal to the length of the major cross-sectional axis of the cable, said cylinder being said portion of said support means around which the cable is wrapped, confining means to prevent lateral movement of the cable on the cylinder and retaining means to prevent the uncoiling of the cable,

the coil having a plurality of layers around the cylinder, the outermost layer having the first cable end and first connector, said first cable end being prevented from uncoiling by the retaining means and the innermost layer of the coil extending in a spiral toward the cylinder, and having a lateral fold in the cable so that the second cable end and second connector extend essentially at a right angle to the coil and extend beyond the confining means,

the cable being in a resiliently lightly stressed condition as a result of its being coiled, the cable being capable of being further resiliently stressed whereby,

upon movement of the first end of the cable away from the retaining means the intermediate portion of the cable is withdrawn from the coil, the number of layers in the coil is reduced and the remaining layers are drawn closer toward the cylinder accompanied by a reduction in the diameters of the layers, the remaining layers being further resiliently stressed so that they store energy, the energy being released and causing the cable to be retracted onto the cylinder as the first end of the cable and the cylinder are moved closer together.

4,499,342

MULTI-POSITION ELECTRIC SWITCH

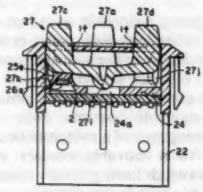
Kiyoshi Nakayama, Shizuoka, Japan, assignor to Murakami Kaimeido Co., Ltd., Shizuoka, Japan

Filed Mar. 3, 1983, Ser. No. 471,477

Claims priority, application Japan, Mar. 4, 1982, 57-29607[U]; May 14, 1982, 57-69369[U]

Int. Cl.³ H01H 9/26

U.S. Cl. 200—5 E **4 Claims**



3. A multi-position electrical switch comprising

a housing,

an insulating base plate disposed within said housing,

a plurality of fixed contact components disposed around a specific center on said insulating base plate, each of said fixed contact components consisting of a pair of printed circuit electrodes,

an insulating sheet laid on top of said insulating base plate, said insulating sheet being provided in positions corresponding to the positions of said fixed contact components with cup-shaped elastic portions opening toward said fixed contact components, said elastic portions being respectively provided inside their top with movable contacts, said movable contacts and said fixed contact components forming switch elements, and

an inclinable operation button having pressing surfaces for closing switch elements when said operation button is inclined, said operation button contacting the respective inner wall of said housing when inclined, said operation button being provided with a plurality of push buttons to effect the inclination thereof, and with a projection at the bottom center thereof, said insulating sheet being provided with a center opening corresponding to said projection, whereby said projection contacts said base plate and prevents closing of any of said switch elements in the event a plurality of push buttons is pressed at the same time.

4,499,343

MONOLITHIC FLAT TACTILE KEYBOARD

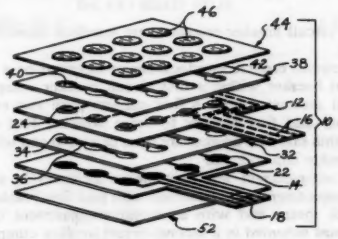
Jean-Jacques Prioux, Chateau Gontier; Roger Meleard, Beynes; Michel Pioger, Laval, and Jean-Jacques Lasvaladas, Chateau Gontier, all of France, assignors to Rogers Corporation, Rogers, Conn.

Filed Mar. 10, 1983, Ser. No. 474,020

Claims priority, application France, Mar. 11, 1982, 82 04095

Int. Cl.³ H01H 13/70

U.S. Cl. 200—5 A **8 Claims**



1. A keyboard assembly comprising:

means defining an array of switches, said switch array defining means including a plurality of spacially displaced convex hollow switch actuators extending upwardly from a first planar side thereof, said actuators being integral with a flexible plastic circuit bearing substrate and each having a top surface, said actuators each supporting a movable switch contact on the side thereof which faces generally oppositely to said first side, at least a portion of said actuators rapidly changing in shape upon application of force to the top surface thereof to provide tactile feedback indicative of the motion of the movable switch contact;

a front face sheet, said face sheet being comprised of a flexible plastic material and having formed therein integral convex key locators, said key locators comprising spaced hollow protrusions which have a circular cross-section, said key locators extending upwardly away from said switch array first side and being in registration with said switch actuators, the top outwardly faceing surfaces of each of said key locators bearing indicia commensurate with the function of the switch of the switch array which is in registration therewith;

said movable switch contacts projecting into and being received by said spaced hollow protrusions; and

first spacer means, said spacer means being comprised of a plastic material and being positioned between and laminated to said switch array means first side and said front face sheet, said spacer means being provided with apertures which are in alignment with said registered switch

actuators and key locators whereby the application of force to said key locators will cause deflection thereof in the direction of the associated switch actuator to thereby transfer the force to the switch actuator.

4,499,344

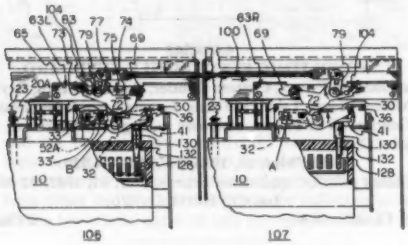
INTERLOCK ARRANGEMENT FOR CIRCUIT BREAKER COMPARTMENTS

Roger N. Castonguay, Terryville, and David B. Powell, Burlington, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Apr. 11, 1983, Ser. No. 483,995

Int. Cl.³ H01H 9/20

U.S. Cl. 200—50 C **14 Claims**



1. A circuit breaker compartment interlock assembly comprising:

first circuit breaker interlock means mounted on a first circuit breaker within a first circuit breaker compartment and associated with a first contact push rod extending from said first breaker to sense whether first contacts within said first breaker are open or closed and with a first breaker trip rod; and

first compartment interlock means mounted in said first compartment and connected with said first breaker interlock means and with a second compartment interlock means mounted in a second circuit breaker compartment containing a second circuit breaker having second breaker contacts for causing said first breaker interlock means to actuate said first trip rod to trip said first breaker when an attempt is made to close said first breaker while said second breaker is already closed.

4,499,345

MAGNETIC SNAP SWITCH

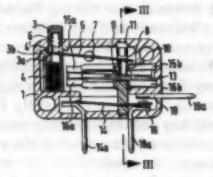
Bernhard Dietrich, Eichenau, Fed. Rep. of Germany, assignor to SDS-Elektro G.m.b.H., Deisenhofen, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 442,875

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3146068

Int. Cl.³ H01H 5/02

U.S. Cl. 200—67 F **12 Claims**



1. A magnetic snap switch comprising a housing having mounted therein a plunger, a return spring for biasing said plunger, a rocker mounted to pivot about an axis perpendicular to the direction of movement of said plunger and having one end coupled to said plunger, and a magnetic jump mechanism actuated by the movement of the other end of said rocker and coupled to a movable contact arm, a first spring force accumulator arranged at said one end of said rocker effective to move said jump mechanism, a second spring force accumulator arranged at the other end of said rocker effective to return said jump mechanism, said jump mechanism comprising a magnetic member fixed to said housing and having a pair of opposed surfaces, and a magnetic anchor coupled to said contact arm located between said opposed surfaces, said anchor being pivotally mounted about an axis parallel to the axis of said rocker to tilt alternately into abutting rest positions with a respective one of said surfaces, and closing a magnetic circuit therewith in each of its abutting positions, said anchor being coupled to said rocker and actuated in cooperation with said spring force accumulators to jump from one surface to the other on movement of said rocker sufficient to create an air gap between said anchor and the existing abutting surface.

4,499,346

SNAP ACTION MINIATURE SWITCH

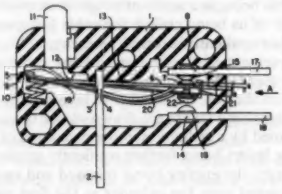
Albert Portmann, Murten, Switzerland, assignor to Sodeco-Saia, AG, Murten, Switzerland

Filed Jul. 19, 1983, Ser. No. 515,371

Claims priority, application Switzerland, Jul. 28, 1982, 4573/82

Int. Cl.³ H01H 5/28

U.S. Cl. 200—67 D **4 Claims**



1. A snap action switch comprising, in combination,

a toggle mechanism composed of two identical toggle springs, resilient means disposed below said two toggle springs,

a support adapted to receive knife-edged bearings,

knife-edged bearings, formed on said toggle springs, for elastically clamping said toggle springs onto said support in spaced apart position,

an arm, connected to each of said toggle springs, including a movable contact near one end and having an opposite free end,

each said arm being actionable at its free end,

a lost motion buffer including a part connected to at least one arm limiting near the movable contacts the relative displacement between said arms,

two stationary contacts respectively positioned above and below said movable contacts, each of said stationary contacts forming part of a switch to be closed upon interengagement of a movable contact with a stationary contact, said switch having three consecutive states,

a plunger movable in opposite directions substantially parallel to the direction of movement of said arms, whereby the plunger, when actuated to move in one direction against the force of said resilient means, actuates the free ends of said arms so as to cause said arms to move in the same direction as that of said plunger thereby establishing contact between one of the movable contacts of said arms and one of the stationary contacts, and

said switch being in the first state of said three consecutive states prior to said plunger being actuated so that one of said stationary contacts is interengaged with one of said movable contacts,

said switch being in the second state of said three consecu-

tive states after said plunger is actuated so that both of said stationary contacts are free from contact with said movable contacts, and

said switch being in a third state following said second state wherein the other of said stationary contacts is interengaged with the other of said movable contacts.

4,499,347

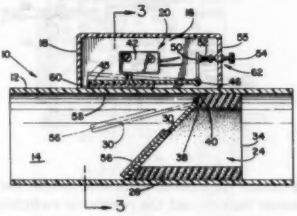
FLUID-FLOW-CONTROL-SWITCH VALVE

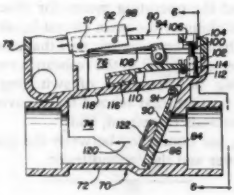
Gary H. Richards, 3204 Palm Ave., Manhattan Beach, Calif. 90266

Continuation-in-part of Ser. No. 342,382, Jan. 25, 1982, abandoned. This application Oct. 18, 1983, Ser. No. 543,079

Int. Cl.³ H01H *35/40*

U.S. Cl. 200—81.9 M **5 Claims**





1. A fluid-flow-control-valve device, comprising:

a housing defining an elongated flow passage, and an integrally, formed sealed switch compartment;

a one-way-valve means positioned in said flow passage to allow fluid to flow in one direction through said flow passage, wherein said vlave comprises:

a valve seat mounted in said flow passage and having inlet and outlet openings;

a flap-valve member hingedly attached adjacent said valve seat and positioned over said outlet opening thereof, so as to allow fluid flow in one direction;

a first magnetic member affixed to said flap valve;

switch means located within said switch compartment;

a flap member hingedly mounted in said switch compartment and positioned therein to seat against the outside wall of the conduit portion defining a switch-compartment base, and adapted to pivot upwardly in a substantially parallel relationship within said fluid passage;

a second magnetic member forming at least part of said flap member and positioned thereon to be aligned with said first magnetic member of said flap valve, whereby said flap member is caused to move in engagement with said switch means when said first magnetic member is positioned adjacent said second magnetic member; and

response-adjusting means adapted to control the responsive movement of said flap member and said switch means;

wherein said response-adjusting means comprises:

a shoulder plate affixed to said flap member;

a set screw adjustably mounted to said housing of said sealed compartment; and

a spring interposed between said shoulder plate and said set screw, whereby adjustable force is applied to said flap member, in order to allow said flap valve to move to a predetermined open position before said flap member engages said switch.

4,499,348

MAGNETIC FLOAT CONTROLLED ELECTRIC SWITCH

Jan E. Gismervik, Knappenveien 62 A, N-5064 Straumsgrend, and Gunnar Sveinsbo, Gravdalsveien 10, N-5034 Ytre Laksevåg, both of Norway

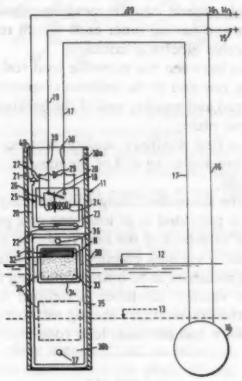
PCT No. PCT/NO81/00041, § 371 Date Jun. 22, 1982, § 102(e) Date Jun. 22, 1982, PCT Pub. No. WO82/01786, PCT Pub. Date May 27, 1982

PCT Filed Nov. 12, 1981, Ser. No. 395,063

Claims priority, application Norway, Nov. 13, 1980, 803415

Int. Cl.³ H01H *35/18*

U.S. Cl. 200—84 C **5 Claims**



1. An electrical switch device which comprises,

a permanent magnet having a field of force,

float means supporting the permanent magnet,

a reed contact switch having a longitudinal axis, openable and closeable by the field of force of said permanent magnet, and being positioned with it's longitudinal axis extending substantially parallel to the North-South direction of said magnet,

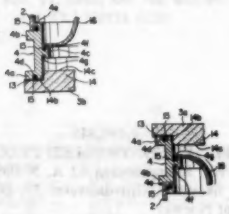
outer actuating means moving said magnet towards and away from said reed contact switch in an accurately controlled rectilinear path of movement wherein the outer actuating means is the buoyancy of said float means and a relay disposed near said reed contact switch and coupled in series therewith, said relay having a coil with an electromagnetic field of force weaker than the field of force of said magnet and which is too weak to alone keep the reed contact switch engaged but which provides an additional field of force in keeping said reed contact switch engaged so that said magnet can be moved a predetermined distance by said actuating means.

4,499,349

VACUUM INTERRUPTER

Shinzo Sakuma, Kawasaki; Junichi Warabi; Masayuki Kano, both of Shizuoka, and Yutaka Kashimoto, Numazu, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,735
Claims priority, application Japan, Nov. 20, 1981, 56-186709; Dec. 18, 1981, 56-204762
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B 6 Claims



1. A vacuum interrupter which comprises:
(a) a hollow metallic cylinder;
(b) two insulating end plates which are made of inorganic insulating material attached to opposite ends of the metallic cylinder;
(c) a stationary lead rod and a movable lead rod which respectively extend into the metallic cylinder through the end plates and having inner ends which respectively support separable electrical contacts;
(d) a bellows between the movable lead rod and one of the end plates, one end of the bellows connecting to the movable lead rod and another end of the bellows connecting to the one end plate;
(e) at least a first auxiliary sealing member connected by means of brazing to an end of the metallic cylinder and to an end plate;
(f) grooves for accommodating solid brazing material, each of which is provided in at least one of a pair of opposing surfaces of members of the interrupter to be brazed and is closed from a vacuum chamber of the interrupter by the remaining members to be brazed opposing the groove; and
wherein the vacuum chamber is defined by the metallic cylinder, the first auxiliary sealing member, the end plates, the stationary and movable lead rods and the bellows.

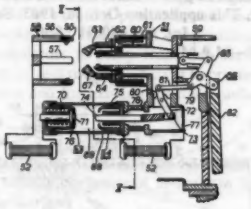
4,499,350

CIRCUIT BREAKER WITH OVERVOLTAGE SUPPRESSION

Yoshiharu Hidaka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 15, 1983, Ser. No. 475,508
Claims priority, application Japan, May 27, 1982, 57-90075
Int. Cl.³ H01H *33/16*
U.S. Cl. 200—144 AP 2 Claims

1. A circuit breaker comprising:
at least one main circuit-breaker portion;
at least one overvoltage suppression portion connected in parallel with said at least one main circuit-breaker portion, said overvoltage suppression portion comprising a resistor adapted to suppress a switching overvoltage of the main circuit-breaker portion, and a resistance switching portion connected in series with said resistor and adapted for switching a current that flows to the resistor;
a tubular tank defining a center line and filled with an insulating gas, said tank housing said circuit-breaker portion and said overvoltage suppression portion;
an insulator support mounted in said tank for supporting said circuit-breaker portion and said overvoltage suppression portion, said insulator support defining a center line which intersects the centerline of said tank;
said overvoltage suppression portion mounted below said main circuit-breaker portion with said resistance switching portion mounted directly below said main circuit-breaker portion and said resistor mounted adjacent to and between said resistance switching portion and said main circuit-breaker portion such that the resistor of the resistance switching portion is arranged within a circle that contains the main circuit-breaker portion and the resistance switching portion:



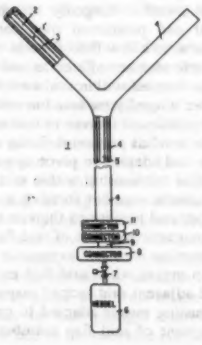
operating means for operating in association the main circuit-breaker portion and the resistance switching portion, said operating means attached to the tubular tank;
a first lever connected between the main circuit-breaker portion and the operating means for effecting the operation of switching of the main circuit-breaker portion, said first lever having an eccentric part that extends therefrom;
a second lever connected to the resistance switching portion for effecting the operation of switching the resistance switching portion, said second lever having an eccentric part that extends therefrom; and
a connecting bar connected between the eccentric parts of the first lever and the second lever.

4,499,351

HIGH-VOLTAGE SWITCH AND ITS USE

Georg Köppl, Birr, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 24, 1983, Ser. No. 460,360
Claims priority, application Switzerland, Jan. 28, 1982, 518/82
Int. Cl.³ H01H *33/91*
U.S. Cl. 200—148 R 5 Claims



1. A high-voltage switch controlling a circuit breaker comprising at least one movable contact, a switch-on device, a switch-off device and at least one isolating screw, a rotary engagement disc provided with at least one recess and rotatably mounted in a housing, said at least one isolating screw

fastened to said housing so as to be releasably connected to said at least one recess of the rotary engagement disc wherein upon disengagement of the at least one isolating screw from the rotary engagement disc, a piston rod connected to said at least one movable contact is released and said circuit breaker is opened.

4,499,352

ADAPTER FOR MOUNTING SWITCH ONTO PANEL

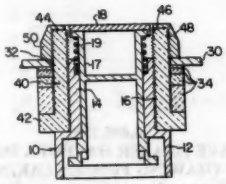
Teizo Fujita, Ibaraki, and Haruo Kimura, Takatsuki, both of Japan, assignors to Izumi Denki Corporation, Osaka, Japan

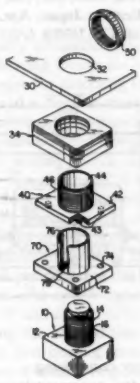
Filed Oct. 26, 1982, Ser. No. 436,888

Claims priority, application Japan, Dec. 2, 1981, 56-179970[U]; Dec. 2, 1981, 56-179971[U]; Dec. 2, 1981, 56-179972[U]; Apr. 30, 1982, 57-64665[U]

Int. Cl.³ H01H *13/04*

U.S. Cl. 200—296 **2 Claims**





1. Adapter apparatus for mounting a switch through a hole in a panel, the switch being of the type comprising a contact section and an actuating section, the actuating section comprising a first hollow cylindrical portion within which an actuator is axially movable, the first hollow cylindrical portion being sized to extend through a first hole from one side of a panel into engagement on the other side of a panel with means for securing the switch to the panel, said apparatus being configured for mounting such a switch in a second, larger hole in a panel, said apparatus comprising:

a second hollow cylindrical portion sized to extend through such a second, larger hole;

a third hollow cylindrical portion sized to extend into the interior of said second cylindrical portion;

means on the inside surface of said third cylindrical portion for engaging said first cylindrical portion whereby such a switch is secured to said third cylindrical portion on one side of the panel and the actuator is accessible within said third cylindrical portion from the other side of the panel when said second cylindrical portion is extended through such a second, larger hole in a panel;

means for securing together said second and third cylindrical portions, said means for securing comprising a first radially outwardly extending flange on said third cylindrical portion, said first flange being sized to abut such a switch on one side of said first flange on the one side of such a panel;

a second radially outwardly extending flange on said second cylindrical portion, said second flange being sized to abut the other side of said first flange; and

protrusion means on one of said flanges for extending into and engaging with recess means on the other of said flanges;

means for securing such a switch in such a second, larger hole in a panel; and

means on the outside surface of said second cylindrical portion for engaging said means for securing on the other side of the panel to mount such a switch in a second, larger hole in a panel.

4,499,353

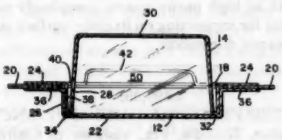
BLISTER PACKAGE

Thomas A. Shields, Bourne, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Mar. 3, 1983, Ser. No. 470,067

Int. Cl.³ B65D *73/00*

U.S. Cl. 206—470 **2 Claims**



1. A reusable container that is adapted to be received in an opening in a display panel comprising:

a. unitary top and bottom portions formed from a common piece of resilient transparent material, said top and bottom portions being secured together at one end by an integral hinge;

b. said bottom portion having a circumferential flange with a circumferentially disposed folded area extending out of the plane of the flange which has a return fold forming an inverted U-shaped shoulder between said folded area and said return fold, said return fold being slightly spaced from said folded area and forming a continuous uninterrupted surface merging into an enlarged article carrying section disposed out of the plane of said flange opposite said inverted U-shaped shoulder, said article carrying section being the same geometric configuration as said folded area;

c. said top portion having a flange and a recessed area formed out of the plane the flange and being substantially the same circumference as said circumferentially disposed folded area and adapted to be received about said folded area to frictionally interfit said recessed area to said folded area;

d. said top and bottom portions opposite the end of said hinge having locking means comprising a protruding embossment on the flange of one of said portions adapted to lock into a recessed embossment on the flange of the other of said portions;

e. said top and bottom portion flanges having offset protruding tabs that can be grasped to facilitate separation of the top and bottom portion to permit access to the interior of the container; and

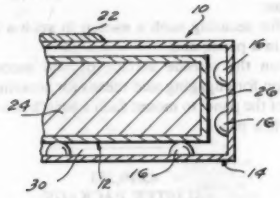
f. said U-shaped shoulder being adapted to be positioned through an opening in a display panel with the flanges of the top and bottom portions abutting opposite surfaces of the panel.

4,499,354

SUSCEPTOR FOR RADIANT ABSORPTION HEATER SYSTEM

Lawrence B. Hill, Short Hills, N.J.; Dennis Garbis, Dix Hills, N.Y.; Robert C. Heller, Stonybrook, N.Y., and Amedeo J. Granata, Flushing, N.Y., assignors to General Instrument Corp., Clifton, N.J.

Filed Oct. 6, 1982, Ser. No. 433,158
Int. Cl.³ H05B 6/10
U.S. Cl. 219—10.49 R **17 Claims**



1. A susceptor for use in a chemical vapor deposition in a radiant absorption heating system comprising:

(A) a heater for absorbing radiant energy and redirecting heat therefrom; and

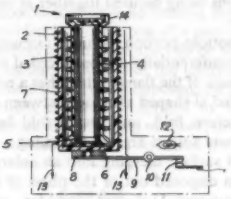
(B) a sheath of high purity quartz completely surrounding said heater for supporting on its outer surface substrates to receive vapor deposition.

4,499,355

HEATED PERSONAL CARE APPLIANCES

Henry J. Walter, Dunedin, Fla., assignor to Clairol Incorporated, New York, N.Y.

Continuation of Ser. No. 429,574, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 247,466, Mar. 25, 1981, abandoned. This application Mar. 16, 1984, Ser. No. 589,857
Int. Cl.³ H05B 6/10
U.S. Cl. 219—10.49 R **1 Claim**



1. An apparatus for inductively heating hair curlers comprising in combination at least one hair curler and an associated inductive heating unit for receiving and heating same prior to engagement with a tress of hair, said hair curler further comprising:

an electrically non-conductive hollow outer member heatable by conduction;

a hollow core member within said outer member heatable by induction to a predetermined temperature;

means interposed between said core member and said outer member for conducting heat therebetween with a time delay between said core member reaching said predetermined temperature and said outer member reaching a final temperature, said delay being a predetermined duration to facilitate handling;

an alloy member having a predetermined Curie point, said alloy member being in thermal contact with said core member for being heated thereby, said alloy member being within said hair curler so as to be insulated from possible electrical contact with said inductive heating unit;

and said inductive heating unit further comprising:

coil means for substantially surrounding said curler during the inductive heating thereof;

circuit means for passing oscillating current through said coil means;

a movable magnetic switch member mounted so as to be in operative magnetic association with said alloy member when said curler is received by said inductive heating unit, said magnetic switch member and said alloy member being magnetically attracted while the temperature of said alloy member is under said Curie point;

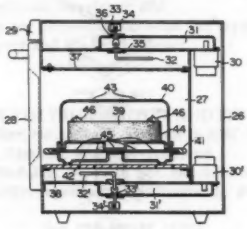
switch means operatively connected to said magnetic switch member and to said circuit means for closing said circuit when said alloy member magnetically attracts said magnetic switch member and for opening same otherwise.

4,499,356

MICROWAVE HEATER HAVING A DEVICE FOR THAWING FROZEN CAKES

Toyotsugu Hatagawa, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 4, 1983, Ser. No. 481,878
Claims priority, application Japan, Apr. 7, 1982, 57-58851
Int. Cl.³ H05B 6/80
U.S. Cl. 219—10.55 E **2 Claims**



1. A microwave heater comprising:

a heating chamber for accommodating an object to be heated;

a microwave generator for supplying microwave energy into said heating chamber;

an object supporting tray made of an electrically insulating material with low dielectric loss and having a substantially annular protruding portion for supporting said object;

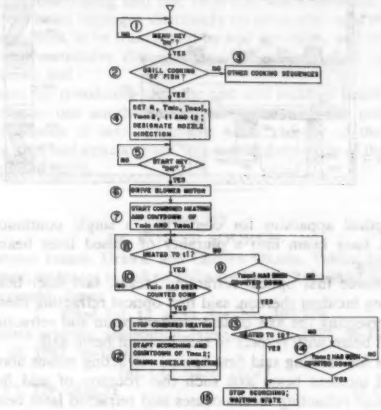
a metallic microwave control plate having a plurality of apertures, said microwave control plate being securely attached to the bottom of said object supporting tray, the protruding portion of said object supporting tray and said microwave control plate providing therebetween a layer of air for preventing heat conduction from said microwave control plate to said object; and

a cup-shaped metallic container having at the top portion thereof a plurality of apertures disposed symmetrically with respect to the center of said top portion and covering said object supported on said object supporting tray, said object supporting tray maintaining a substantially constant spatial relationship among said heating chamber, said cup-shaped metallic container, said object and said microwave control plate.

4,499,357
ELECTRONICALLY CONTROLLED COOKING APPARATUS

Toshitada Kojima, Ohtsu, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jun. 13, 1983, Ser. No. 503,505
Claims priority, application Japan, Jun. 16, 1982, 57-104508
Int. Cl.³ H05B 6/68
U.S. Cl. 219—10.55 B 3 Claims



1. In an electronically controlled cooking apparatus comprising at least a first heating source for heating an article to be heated, an infrared sensor for detecting the temperature of said article to be heated, and a control means for controlling said first heating source, said control means including first memory means for storing a predetermined heating temperature, means for activating said first heating source, and means responsive to said infrared sensor to deactivate said first heating source when said infrared sensor detects the attainment of said predetermined temperature, the improvement comprising:

second memory means in said control means for storing a predetermined minimum heating time period said minimum heating time period being the minimum heating time necessary to heat said article determined in accordance with the nature of said article to be heated;

means for measuring the elapsed time period from the time of activating said first heating source; and

means in said control means responsive to said minimum heating time period stored in said second memory means and to said elapsed time measuring means to continue activation of said first heating source when said infrared sensor detects attainment of said predetermined temperature unless said predetermined minimum heating time period has elapsed.

4,499,358
DRIVING CIRCUIT FOR RADIO FREQUENCY DRYER

Burton W. Scott, Plano, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 27, 1984, Ser. No. 593,988
Int. Cl.³ H05B 6/68
U.S. Cl. 219—10.77 9 Claims

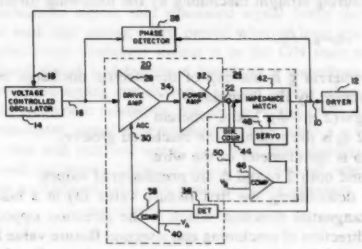
1. A driving circuit for supplying a radio frequency electrical signal to the applicator section of a radio frequency dryer of the type which applies a fluctuating electromagnetic field to a printed sheet or web to induce evaporation of ink therefrom, comprising:

voltage controlled oscillator means for providing an oscillator output signal which is substantially uniform in amplitude and which is related in frequency to the control voltage supplied to a frequency control input of said voltage controlled oscillator means,

amplifier means for receiving said oscillator output signal and for providing a radio frequency drive signal,

means for supplying said radio frequency drive signal to said applicator section of said dryer as said radio frequency electrical signal to produce said fluctuating electromagnetic field, and

phase detector means, including means responsive to said

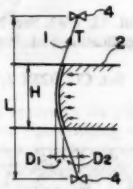


radio frequency electrical signal supplied to said applicator section and to said oscillator output signal, for providing a frequency control signal to the frequency control input of said voltage controlled oscillator means, said frequency control signal being directly related to the phase difference between said radio frequency electrical signal supplied to said applicator section and said oscillator output signal, whereby the voltage controlled oscillator means drives said applicator section at substantially the resonant frequency of said section.

4,499,359
SHAPE COMPENSATING METHOD FOR WIRE-OUT ELECTRIC DISCHARGE MACHINING

Haruki Obara, Sagamihara, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP81/00403, § 371 Date Aug. 26, 1982, § 102(e) Date Aug. 26, 1982, PCT Pub. No. WO82/02354, PCT Pub. Date Jul. 22, 1982
PCT Filed Dec. 23, 1981, Ser. No. 414,361
Claims priority, application Japan, Dec. 30, 1980, 55-186743
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 W 1 Claim



1. A shape compensating method for correcting a machining error causing deviation from original coordinates of a wire electrode during straight or curved wire-cut, electro-discharge machining of a workpiece caused by an electrically discharged, wire electrode, comprising the steps of:

(a) subjecting the workpiece to trial straight machining at a trial feed speed F_0 by placing the wire electrode at a first position which is a predetermined gap away from the workpiece and applying voltage therebetween to cause a spark discharge across the gap;

(b) stopping trial straight machining by stopping the discharge at a second position relative to the workpiece,

wherein stopping the electric discharge draws the wire electrode into contact with the workpiece at a third position;

(c) retracting the wire electrode away from the third position in the direction of the machined path and determining a retraction distance D_0' from the discharge stopping position to the position where the wire elctrode and the workpiece leave contact;

(d) determining a flexure value D_0 at the trail feed speed F_0 during straight machining by the following formula:

$$D_0 = g + D_0',$$

wherein g is the gap of the electric discharge as determined by the formula:

$g = (2\epsilon_0 - \phi)/2$, and wherein

$2\epsilon_0$ is the width of the machined groove,

ϕ is the diameter of the wire,

and both $2\epsilon_0$ and ϕ are premeasured values;

(e) determining the first flexure value D_T in a machining tangential direction which is the direction opposite the direction of machining and a second flexure value D_R in a radial direction which is the direction inwardly of a curve being machined by the following equations:

$$D_T = \frac{F}{F_0} \cdot D_0$$

$$D_R = \frac{4}{3\pi} \cdot \frac{F}{F_0} \cdot \frac{\epsilon_0}{R} \cdot D_0$$

wherein F is the prevailing feed speed and R is the machining radius, and wherein R is infinite for straight machining; and

(f) correcting the machining path by using means for correcting the original coordinates of the wire electrode based on the tangential flexure value D_T and the radial flexure value D_R obtained from steps (a)–(e).

4,499,360

METHOD OF BRAZING SILICON CARBIDE PARTS USING SI-CO SOLDER

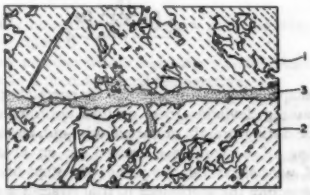
Reinhard Röttenbacher, Meersburg, Fed. Rep. of Germany, assignor to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 513,020

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 323032

Int. Cl.³ B23K *1/02*

U.S. Cl. 219—85 H **8 Claims**



1. A process for the high-temperature reaction brazing of parts made of silicon carbide materials employing a solder consisting essentially of 20–45% cobalt and 80–55% silicon, by weight, which comprises depositing said solder on at least one of said parts, compressing said parts together, and heating.

4,499,361

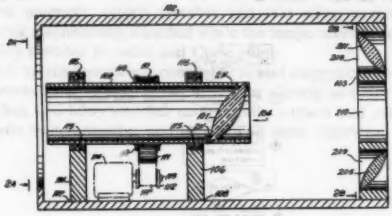
LASER BEAM INTERRUPTER AND DIVIDER

Reiner G. Brinker, Mechanicsville, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed May 2, 1983, Ser. No. 490,566

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LK **8 Claims**



1. Optical apparatus for converting a single continuous incident laser beam into a plurality of pulsed laser beams, comprising:

a rotatable first optical refracting means, said laser beam being incident thereon, said first optical refracting means intersecting the axis of said incident beam and refracting said beam with respect to said incident beam axis,

means for rotating said first optical refracting means about said incident beam axis such that rotation of said first optical refracting means causes said refracted laser beam to sweep through a locus of points,

and a plurality of fixed second optical refracting means arrayed within a holder of nontransmissive material and spaced apart by portions of said holder;

the configuration of said array, its distance from and orientation with respect to said rotatable first optical refracting means and the spacing between each of said second optical refracting means being selected such that said refracted beam impinges alternately on sequential ones of said plurality of fixed second optical refracting means and of said separating portions of said holder;

the transmission of said refracted beam being substantially interrupted by said nontransmissive material of said holder when said beam impinges thereon and said beam being further refracted by each of said fixed second optical refracting means when said beam impinges thereon, such that a plurality of pulsed laser beams emerges from said optical apparatus.

4,499,362

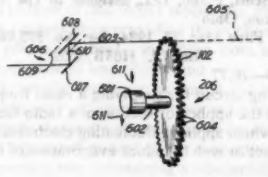
ROTARY BEAM CHOPPER WITH CONTINUOUSLY VARIABLE DUTY CYCLE

Peter Martin, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 29, 1983, Ser. No. 509,160

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LA **12 Claims**



1. Apparatus for converting a continuous incident laser beam into a pulsed laser beam wherein the duty cycle is sub-

stantially continuously variable between a minimum value and a maximum value, comprising:

a disc of nontransmissive material, said disc being rotatable about its axis and having a plurality of apertures disposed within an annular zone thereon, the ratio of the width of said apertures to the width of the adjacent nontransmissive portions of said disc between said apertures varying substantially continuously with the disc radius from a minimum ratio to a maximum ratio, said continuous beam being incident on said disc within said annular zone;

means for rotating said disc such that said continuous incident beam impinges alternately on sequential ones of said apertures, to be transmitted by said apertures, and on said nontransmissive disc portions, to create a first pulsed beam; and

means for translating said disc and said incident beam relative to one another to permit variation of the point of incidence of said continuous beam radially of the disc within said annular zone, to vary the duty cycle of the first pulsed beam.

4,499,363

DC POWER SOURCE

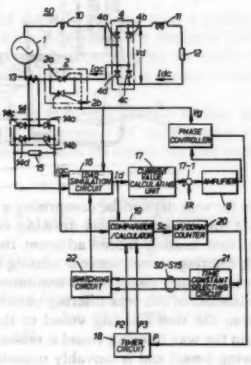
Takatomo Izume, Urawa, and Chihiro Okado, Fuchu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 13, 1982, Ser. No. 397,779

Claims priority, application Japan, Jul. 30, 1981, 56-119748; Nov. 18, 1981, 56-184685

Int. Cl.³ B23K *11/24*

U.S. Cl. 219—130.21 **18 Claims**



1. A DC power source apparatus, comprising:

current regulator means including electronic contactor means;

transformer means including a primary winding and a secondary winding, said primary winding being connected in series with said current regulator means to form a series circuit, said series circuit being adapted to receive power from an AC power source;

rectifier means connected to said secondary winding of said transformer means, output terminals of said rectifier means being adapted to supply DC current to a DC load including inductance;

simulation means including means connected to detect an AC current flowing through said series circuit for simulating said DC current flowing through said DC load based on said detected AC current and a simulated time constant of said DC load to produce a simulated signal; and

control means connected to receive said simulated signal for comparing said simulated signal with a predetermined current reference to produce a phase control signal based on a comparison result;

said current regulator means further including means connected to receive said phase control signal for controlling said electronic contactor means such that said DC current becomes equal to a predetermined value corresponding to said predetermined current reference and;

means connected to receive said detected AC current for rectifying said detected AC current to produce a rectified signal, and

load simulation means connected to receive said rectified signal for simulating said DC current based on said rectified signal and said simulated time constant to produce said simulated signal, said simulated signal being determined such that during a first period when at least one of said electronic contactor means is in the ON state said simulated signal is determined based on a waveform of said rectified signal, and during a second period when all of said electronic contactor means are in the OFF state said simulated signal is determined to have such a waveform that said rectified signal, at a time immediately before said electronic contactor means is turned off, attenuates in accordance with said simulated time constant.

4,499,364

RESISTANCE WELDING APPARATUS FOR JOINING PIPES END TO END

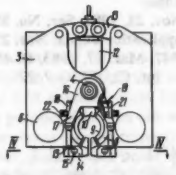
Alexandr M. Starostin, ulitsa Lenina, 19, kv. 62; Alexei M. Malakhov, ulitsa Pushkina, 95, kv. 5; Tamara A. Chertilina, ulitsa Pushkina, 130, kv. 31; Vladislav I. Ponomar, ulitsa Kirova, 2, kv. 42; Nikolai I. Postolaty, ulitsa K. Marxa, 68-a, kv. 45, all of Kakhovka, Khersonskaya oblast; Sergei I. Kuchuk-Yatsenko, ulitsa Filatova, 1/22, kv. 47, Kiev; Filipp I. Peretrukhin, ulitsa Lenina, 20, kv. 3; Anatoly D. Gluschenko, ulitsa Kirova, 19, kv. 10, both of Kakhovka, Khersonskaya oblast; Sergei A. Solodovnikov, ulitsa Solomenskaya, 41, kv. 50, Kiev; Jury G. Shvets, Lesnoi gorodok, ulitsa P. Morozova, 11, and Orest M. Serafin, ulitsa Dirizhabelnaya, 28, korpus 1, kv. 45, both of Moskovskaya oblast, all of U.S.S.R.

PCT No. PCT/SU81/00021, § 371 Date Nov. 2, 1982, § 102(e) Date Nov. 2, 1982, PCT Pub. No. WO82/03034, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 2, 1981, Ser. No. 440,221

Int. Cl.³ B23K *11/02*

U.S. Cl. 219—161 **6 Claims**



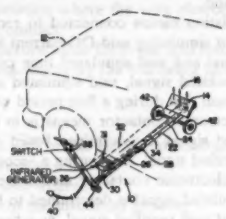
1. A resistance welding apparatus for joining pipes end to end, comprising at least two pipe gripping means each including a pair of articulated side members, said side members being axially aligned for mutual axial movement, each side member being provided with a gripping jaw, welding transformers electrically connected to the gripping jaws and swinging jaws pivoted to the side members for abutment against the pipe surface in their operating position, each pipe gripping means having at least one bracket (16) on which there is pivotally mounted at least one double-arm lever (18) for each side member (3) and similar arms of the levers (18) pivotally mounted on one and the same bracket (16) are interconnected by an exension spring (19), each side member (3) having a related swinging jaw (14) and stop means (21) for limiting the movement of each said lever (18) relative the corresponding side member (3) in the direction of the action of the extension spring (19), the other arm of each lever (18) being operatively connected to the corresponding swinging jaw (14).

4,499,365

PORTABLE HEATER FOR RADIANTLY HEATING THE UNDERBODY OF A MOTOR VEHICLE

Abe Puzins, 610 SW. Alder, Suite 1103, Portland, Oreg. 97205

Filed Jan. 27, 1984, Ser. No. 574,365
Int. Cl.³ H05B 3/00; F02N 17/02
U.S. Cl. 219—205 3 Claims



1. Apparatus for heating the underbody of a vehicle comprising:

(a) an elongate support member having at least one wheel mounted at a first end thereof and a support block mounted at a second end thereof, said wheel and said support block maintaining said support member above the floor and substantially parallel thereto;

(b) radiant energy generating means mounted on said support member and oriented to project a beam of radiant energy substantially parallel to and substantially along the longitudinal axis of said support member; and

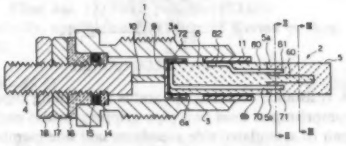
(c) radiant energy reflecting means mounted on said support member downstream of said radiant energy generating means for reflecting said beam of radiant energy from the generating generally upwardly means to a predetermined location on the underbody of the vehicle.

4,499,366

CERAMIC HEATER DEVICE

Hitoshi Yoshida, Kariya; Morihiro Atsumi, Okazaki; Nobuei Ito, Aichi, and Kinya Atsumi, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Nov. 21, 1983, Ser. No. 554,107
Claims priority, application Japan, Nov. 25, 1982, 57-206373; Feb. 8, 1983, 58-19947; Mar. 17, 1983, 58-45542
Int. Cl.³ F23Q 7/22
U.S. Cl. 219—270 5 Claims



1. A ceramic heater device comprising:

a metal housing;

a central electrode electrically insulated from and attached to said metal housing, one end of said central electrode being positioned within said metal housing;

a sintered ceramic insulator, one end of which is inserted into said metal housing and attached to said metal housing, the other end of said sintered ceramic insulator being extending outwardly from said metal housing;

a sintered ceramic U-shaped heater body fixed to said other end of said sintered ceramic insulator so that said heater body is electrically insulated from said metal housing by means of said ceramic insulator, said U-shaped ceramic heater body comprising:

a forward end; and

a pair of leg portions extending from said forward end towards said metal housing, the specific resistance value of said forward end being more than twice as great as that of said leg portions; and

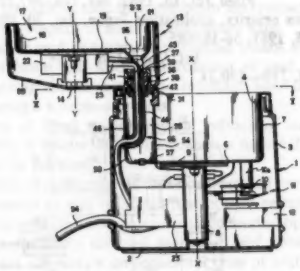
a pair of metal lead wires embedded in said insulator and said heater body, one end of each said metal lead wire being electrically connected to respective ones of said leg portions of said U-shaped heater body at one end of said U-shaped heater body and an opposite end of each said metal lead wire being exposed to an outer surface of said ceramic insulator, and one of said exposed ends being electrically connected to said metal housing while the other said exposed end being electrically connected to said one end of said central electrode.

4,499,367

DEVICE AND METHOD FOR WAX DEPILATION

Pierre Schwob, Lyons, France, assignor to SEB S.A., Selongey, France

Filed Jun. 7, 1983, Ser. No. 501,903
Claims priority, application France, Jun. 16, 1982, 82 10478
Int. Cl.³ F27B 14/00
U.S. Cl. 219—421 10 Claims



1. A device for wax depilation, comprising a housing having an inner space for receiving a wax drawing vessel carried by said housing, first heating means adjacent the wax drawing vessel, a wax filtering vessel, second heating means adjacent the wax filtering vessel, and a spout communicating with an aperture in a bottom of the wax filtering vessel, and providing a spillway from the wax filtering vessel to the wax drawing vessel, wherein the wax filtering vessel is raised with respect to the wax drawing vessel and is movably mounted with respect to the housing between an operational position in which said wax filtering vessel overhangs the housing and is off-set with respect to the wax drawing vessel, and a folded away position in which the wax filtering vessel is brought back above the wax drawing vessel.

4,499,368

UTENSIL REMOVAL DETECTION SYSTEM FOR COOKING APPLIANCE

Thomas R. Payne, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 5, 1984, Ser. No. 586,053
Int. Cl.³ H05B 1/02
U.S. Cl. 219—452 8 Claims

1. A utensil removal detection arrangement for a cooking appliance having at least one surface heating unit for heating a utensil placed thereon, said detection arrangement comprising:

temperature sensing means for sensing the temperature of a utensil placed on the surface unit;

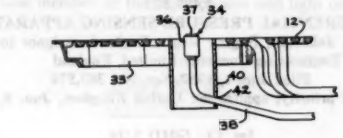
means for detecting a sensed utensil temperature greater than a predetermined reference temperature, said reference temperature being greater than the maximum tem-

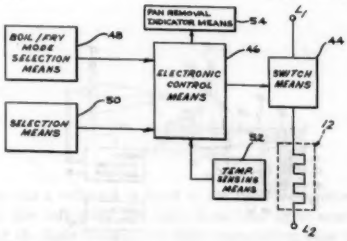
perature sensed when no utensil is present on said surface unit;

clock means responsive to said temperature sensing means operative to measure the duration of time intervals during which the sensed utensil temperature is less than said predetermined reference temperature;

means responsive to said clock means for detecting a time interval of duration greater than a predetermined reference duration, said reference duration being sufficient to allow the sensed temperature to reach said reference temperature when a utensil is present on said surface unit; and

means operative to de-energize the surface unit upon detection of the occurrence of such a time interval, which occurrence signifies no utensil on said surface unit.





4,499,369

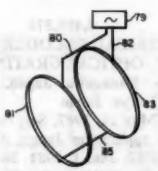
HEATING ELEMENT ARRANGEMENT FOR A VACUUM FURNACE

Thomson B. Gibb, Southampton, Pa., assignor to Vacuum Furnace System Corporation, Souderton, Pa.

Filed May 20, 1983, Ser. No. 496,635

Int. Cl.³ H05B *3/10*

U.S. Cl. 219—552 **2 Claims**



1. A heating means for use in a hot zone chamber of a vacuum furnace comprising in combination: at least first and second heating elements formed of material that generates heat in response to electrical current passing therethrough and formed in a closed plane so that when said elements are generating heat there are no cold spots; at least first and second terminal means respectively secured to said first and second heating elements; electrical current path means connecting said first and second heating elements at respective locations thereof which respectively lie substantially opposite said first and second terminals so that there is a serial ohmic connection between said first and second terminals, which serial ohmic connection is bifurcated through said first and second heating elements; and electrical current supply means to supply electrical current to said first and second terminals so that electrical current, because of said series connection, passes through said first terminal, becomes divided as it passes through the bifurcated path defined by said first heating element to said electrical current path means, passes through said electrical current path means to be divided along the bifurcated path defined by said second heating element to said second terminal to be returned to said electrical current supply means, whereby said first and second heating elements present a high impedance and become heated completely without leaving a cold spot.

4,499,370

ZERO-RESET TYPE COUNTER

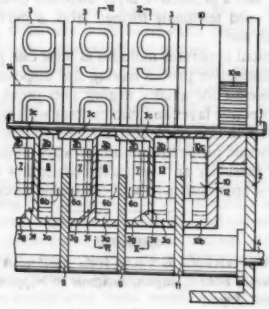
Toshio Nishiuchi, Kashiwa, Japan, assignor to Dai-Ichi Seiko Co., Ltd., Kawaguchi, Japan

Filed Nov. 23, 1983, Ser. No. 554,710

Claims priority, application Japan, Jul. 29, 1983, 58-137854

Int. Cl.³ G06C *15/42*

U.S. Cl. 235—144 HC **4 Claims**



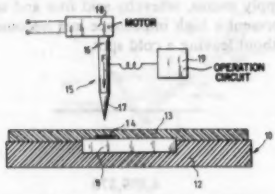
1. A zero-reset type counter comprising a frame; a supporting shaft mounted on said frame; a plurality of digit wheels rotatably mounted on said supporting shaft, each of said digit wheels having a first annular recess formed with an internal gear on its inner perpheral face on one side thereof and having a second annular recess formed respectively with an eccentric cam on its center portion and order shift teeth on its inner peripheral face on another side thereof; a rotary shaft rotatably mounted on said frame adjacent to said plurality of digit wheels; a plurality of zero reset levers secured on said rotary shaft and interposing respectively between a pair of said digit wheels adjacent each other and engageable to said eccentric cam; a pinion rotatably mounted on said each zero reset lever and engageable with said internal gear; and an order shift pinion so mounted on said each zero reset lever as to be able to rotate integrally with said pinion and engageable with said order shift teeth, the digit wheel of higher order being turned by one numeral through said order shift teeth and order shift pinion when said pinion is meshed with said internal gear and the digit wheel of lower order adjacent to said digit wheel of higher order is fully rotated at counting, and said each zero reset lever being turned in order to simultaneously let said pinion disengage from said each internal gear and said each order shift pinion from said each order shift teeth and to simultaneously and forcibly rotate said each digit wheel to the zero indicating position through said each eccentric cam at zero resetting.

4,499,371

ELECTRICAL CONNECTION SYSTEM

René Rose, Voisins-le-Bretonneux, France, assignor to Flonic S.A., Montrouge Cedex, France

Continuation of Ser. No. 210,196, Nov. 25, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 429,766
Claims priority, application France, Nov. 27, 1979, 79 29115
Int. Cl.³ G07F 3/02
U.S. Cl. 235—492 19 Claims



1. A system for establishing an electrical connection between a portable memory card carrying an electronic circuit covered externally with a protective layer and electrical apparatus for reading said card, wherein:

said card includes at least a pair of discrete coplanar terminals disposed therein and connected to said electronic circuit, and a protective layer disposed over at least each of said card terminals formed from a perforable plastic material; and

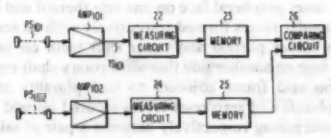
said electrical apparatus includes at least one pair of electrically conductive probes having tips disposed in the same plane, means for axially urging said probe tips through said protective layer and into contact with said card terminals and a source of electrical current for said probe tips, whereby said probe tips simultaneously contact said terminals to establish an electrical connection between said electrical apparatus and said electronic circuit.

4,499,372

MAIL-ARTICLE TRACING APPARATUS

Kazumi Nakano, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1981, Ser. No. 305,245
Claims priority, application Japan, Sep. 29, 1980, 55-135441; Jul. 29, 1981, 56-118833
Int. Cl.³ G01V 9/04
U.S. Cl. 250—223 R 9 Claims



1. A mail-article tracing apparatus comprising:

first and second mail detectors provided at an entrance and an exit of a transport path, respectively, for detecting mail-articles transported on the transport path, the distance between said first and second mail detectors corresponding to the length of plural mail-articles;

first and second measuring means for measuring intervals between two adjacent transported mail-articles at the entrance and exit of the transport path, respectively, in response to the outputs of said first and second mail detectors, said first and second measuring means delivering data expressing said intervals;

first and second memory means for storing said data expressing the intervals measured by said first and second measuring means, respectively;

means for comparing the data delivered from said first and second memory means; and

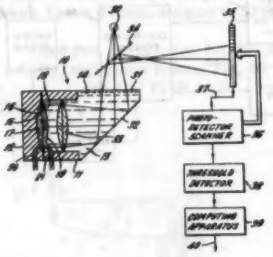
abnormality detecting means for detecting an abnormality in mail-article transportation on the transport path when the data delivered from said first and second memory means are substantially different.

4,499,373

DIFFERENTIAL PRESSURE SENSING APPARATUS

James S. Johnston, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, England

Filed Jun. 1, 1982, Ser. No. 383,574
Claims priority, application United Kingdom, Jun. 9, 1981, 8117700
Int. Cl.³ G01D 5/34
U.S. Cl. 250—231 P 11 Claims



1. Differential pressure sensing apparatus comprising a transducer body, a diaphragm mounted in the body, means for applying across the diaphragm a differential pressure to be measured, whereby the diaphragm is strained in response thereto so as to have a curvature representative of said pressure difference,

monochromatic light source means arranged to direct monochromatic light at the diaphragm and to set up interference fringes in which successive spacings between adjacent fringes vary in a manner representative of said curvature of the diaphragm,

means for monitoring said fringes to provide signals indicative of variations in the spacing between adjacent fringes or adjacent groups of fringes, and automatic computing means arranged to receive said signals and to calculate therefrom said curvature of the diaphragm and thence the pressure difference across the diaphragm.

4,499,374

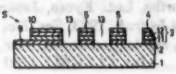
PHOTOELECTRICAL ENCODER EMPLOYING AN OPTICAL GRATING

Yoshihiko Kabaya, Kanagawa, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,818
Claims priority, application Japan, Jun. 1, 1981, 56-84084; Jun. 1, 1981, 56-84082; Jun. 1, 1981, 56-84083
Int. Cl.³ G01B 11/00; G08C 9/06
U.S. Cl. 250—237 G 10 Claims

1. A photoelectrical encoder employing optical gratings wherein a physical quantity is detected from brightness obtained by moving a first and a second scale each provided thereon with an optical grating relative to each other, characterized in that said first scale is constructed such that narrow belt-shaped reflecting portions and unreflecting portions are alternately arranged on a base member, said second scale is constructed such that, on a light transmitting base member, a first signal lead-out material layer made of a light shielding conductive material, a PN semiconductor layer for converting light into electricity and a second signal lead-out material layer made of a light transmitting conductive material are laminated

in the described order to form a narrow belt-shaped light receiving portion and a plurality of narrow belt-shaped light receiving portions thus formed are arranged at regular pitches, as against the light from said light transmitting base member, said light receiving portions function as light shielding slits and intervals between the light receiving portions are formed into light transmitting slits, a light source is fixed to the light transmitting base member on the side opposite said light receiving



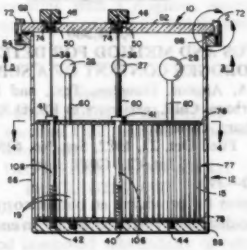
portions and a reflector is fixed to the light transmitting base member for reflecting the light from said light source and radiating the light through the light transmitting base member to the side opposite the light source, said first and second scales are disposed in such a manner that said light reflecting portions and said light receiving portions face each other, and the light from said light source is adapted to be transmitted through said light transmitting slits of said second scale and radiated onto reflecting portions of said first scale.

4,499,375

NUCLEAR IMAGING PHANTOM

Ronald J. Jaszczak, 2307 Honeysuckle Rd., Chapel Hill, N.C. 27514

Filed May 10, 1982, Ser. No. 376,775
Int. Cl.³ G01D *18/00*; G12B *13/00*
U.S. Cl. 250—252.1 **6 Claims**



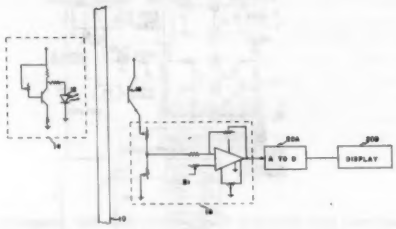
1. A nuclear imaging phantom comprising a case encompassing a cavity and having at least one access opening therein to said cavity and having internally located stabilizing means remote from said access opening, and at least one straight, rigid, capillary tube is removeably insertable into said opening externally from said case to extend into said cavity to said stabilizing means.

4,499,376

HYDRAULIC OIL COUNTING DEVICE AND WATER SEPARATOR

Paul T. Frost, 7746 Valle Vista Dr., Cucamonga, Calif. 91730, and Robert T. Thomas, Whittier, Calif., assignors to Paul T. Frost, Cucamonga, Calif.

Continuation of Ser. No. 246,205, Mar. 23, 1981,. This application Sep. 14, 1983, Ser. No. 532,294
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—341 **3 Claims**



1. Apparatus for measuring particulate contamination in a liquid as a function of infrared opacity comprising:

infrared radiation source means providing non-monochromatic, relatively wide bandwidth infrared radiation comprising light emitting diode means;

conduit means containing a representative amount of the liquid, the conduit means having a portion thereof optically connected to the infrared light source means such that the infrared light therefrom passes through a first section of the portion into the liquid and out of the portion through a second section, said first and second sections being substantially transparent to the infrared light;

infrared sensing means sensitive to the relatively wide bandwidth infrared radiation from the infrared radiation source optically connected to the second section providing an electric analog signal as a function of the amount of infrared radiation received by the sensing means; and,

output means comprising linear amplifier means calibrated for at least one signal level from the sensing means for a known infrared radiation level, analog-to-digital converter means connected to the output of the amplifier, and output meter means connected to the analog-to-digital converter such that a digitally displayed indication of the amount of infrared radiation received by the sensing means is provided, thereby supplying an indication of the infrared opacity of the liquid.

4,499,377

DETECTION AND CONTROL SYSTEM BASED ON AMBIENT AIR QUALITY

Gustave S. Presser, Quebec, Canada, assignor to Acme Engineering Products Ltd., Montreal, Canada

Filed Sep. 29, 1982, Ser. No. 426,980
Int. Cl.³ G01N *21/00*
U.S. Cl. 250—343 **9 Claims**

1. Ambient air quality detection and control system for a plurality of sampling positions, comprising

a sampling head located in each of the sampling positions,

a pump for each sampling head, for pumping a sample of gas from each sampling head,

a calibration pump having a filter means to provide clean gas,

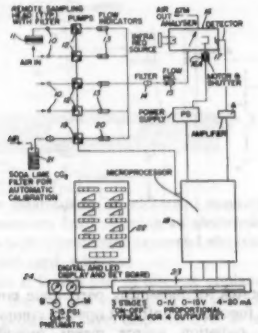
a selector means for selecting operation time of each pump individually and time lapse between sequences,

an analyser for analysing samples of gas from each sampling head and the calibration pump, the analyser producing an analysis signal representing quantity of contaminant gas present in each sample,

a flowline system with flow lines from each sampling head and the calibration pump, combining in a sample line to the analyser, the flow line system having no selector valves therein,

means for setting a plurality of first predetermined set points representing levels of the contaminant gas which may occur in each sample,

means for producing a plurality of on/off signals representing when the contaminant gas in each sample reaches the first set points,



means for setting a second predetermined set point representing a level of the contaminant gas which may occur in each sample and a predetermined proportional range from the second set point for each sample, and

means for producing an analog signal indicating a deviation from the second set point in the proportional range for each sample representing the contaminant gas in each sample, the analog signal for each sample being in a plurality of output ranges of different magnitudes.

4,499,378

INFRARED RADIATION GAS ANALYZER

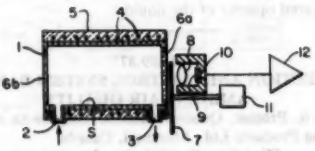
Kimio Miyatake; Kozo Ishida; Hiroyuki Ebi, and Takeshi Shimada, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Mar. 8, 1983, Ser. No. 473,344

Claims priority, application Japan, Mar. 9, 1982, 57-33704[U]; Mar. 9, 1982, 57-33705[U]

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—343 **8 Claims**



1. An infrared radiation gas analyzer for determining the concentration of an ingredient in a sample gas, comprising:

a sample gas containing means for containing a sample gas at a temperature at which the ingredient the concentration of which is to be determined will emit infrared radiation in a range characteristic of the ingredient and means for allowing said infrared radiation to escape from said containing means;

an optical chopper outside said containing means for interrupting the radiation escaping from said containing means;

a filter in the path of the radiation escaping from said containing means, said filter transmitting only radiation in said range;

an infrared radiation detector positioned for receiving the radiation passed by said filter and emitting a signal representative of the radiation received by the detector and which is representative of the concentration of the ingredient the concentration of which is to be determined in the sample gas.

4,499,379

INFRARED RADIATION GAS ANALYZER

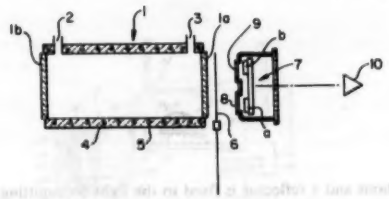
Kimio Miyatake, and Katsuhiko Tomita, both of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Mar. 8, 1983, Ser. No. 473,345

Claims priority, application Japan, Mar. 9, 1982, 57-33702[U]

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—343 **3 Claims**



1. An infrared radiation gas analyzer for determining the concentration of an ingredient in a sample gas, comprising:

a sample gas containing means for containing a sample gas at a temperature at which the ingredient the concentration of which is to be determined will emit infrared radiaton in a range characteristic of the ingredient and means for allowing said infrared radiation to escape from said containing means;

an optical chopper outside said containing means for interrupting the radiation escaping from said containing means;

a pair of filters in the path of the radiation escaping from said containing means and spaced transversely of said path, one of said filters transmitting only radiation in said range and the other of said filters transmitting only radiation in a range near to said firstmentioned range;

infrared radiation detectors positioned for receiving the radiation passed by said respective filters and connected to each other for emitting a signal representative of the difference between the radiation received by the respective detectors and which is representative of the concentration of the ingredient the concentration of which is to be determined in the sample gas.

4,499,380

APPARATUS AND METHOD FOR DETERMINING THE HYDROGEN CONTENT OF A SUBSTANCE

Mohamed A. Aggour, Houston, Tex., and Sanjoy Banerjee, Santa Barbara, Calif., assignors to ESSO Resources Canada, Ltd., Calgary, Canada

Filed Oct. 21, 1982, Ser. No. 435,817

Int. Cl.³ G01T *3/00*

U.S. Cl. 250—390 **30 Claims**

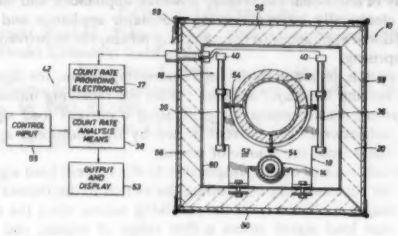
1. Apparatus for providing an output corresponding to the amount of hydrogenous material within an enclosure, comprising:

a fast neutron source, said fast neutron source being positioned proximate said enclosure and being incapable of achieving criticality;

moderating material positioned intermediate said enclosure and said fast neutron source, said moderating material having a neutron moderating ability at least equivalent to that of a 1 cm thickness of water; and

a neutron detection system including at least one neutron

detector positioned proximate said enclosure, said neutron detection system being adapted to provide an output



signal representing the rate of detection of neutrons scattered from said hydrogenous material.

4,499,381

MEANS FOR CONVERTING X-RAYS INTO RADIATION WHICH DARKENS X-RAY FILMS

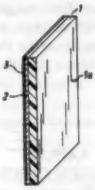
Walter Bauer, Munich, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 199,377, Oct. 21, 1980, Pat. No. 4,399,363. This application Feb. 4, 1983, Ser. No. 463,812

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943854

Int. Cl.³ G01J *1/58*

U.S. Cl. 250—483.1 **16 Claims**



1. A flexible laminate to be removably positioned in a holding arrangement for x-ray film during exposure of the latter, said laminate comprising:

(a) a flexible plate;

(b) a flexible fluorescent layer at one side of said plate for intensifying x-rays to which the film is exposed; and

(c) a flexible ferromagnetic layer at the other side of said plate for cooperating with a magnetic element of the holding arrangement so as to urge said fluorescent layer towards the film.

4,499,382

INFRARED SOURCE ELEMENT

Kent D. Vincent, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 18, 1982, Ser. No. 434,817

Int. Cl.³ G21G *4/00*

U.S. Cl. 250—493.1 **3 Claims**

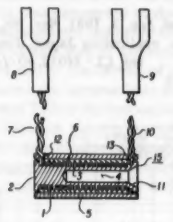
1. An infrared source comprising as source element having:

an elongated rod composed substantially of refractory ceramic material, said elongated rod having an outer diameter OD and a plurality of circumferential grooves of depth d in the outer diameter;

a radiation cavity in the elongated rod oriented axially with respect to the elongated rod and opening on an end of the elongated rod;

a heater wire with cross sectional diameter w less than or equal to depth d of the circumferential grooves for substantially uniformly heating a length L of the elongated rod, said heater wire wound around the outside of the elongated rod in the plurality of circumferential grooves and positioned to maintain the bottom of the radiation cavity within the substantially uniformly heated length L of the elongated rod, with adjacent coils of said heater wire separated by the plurality of circumferential grooves;

an electrically non-conductive outer sheath of inner diameter ID substantially equal to the outer diameter OD of the



elongated rod, said outer sheath precisely and concentrically covering the elongated rod; and

sintered ceramic cement interposed between the elongated rod and the outer sheath encapsulating substantially all of the heater wire wound around the outside of the elongated rod in the plurality of circumferential grooves so that said outer sheath and said ceramic cement together encapsulate the heater wire to retard evaporation of said heater wire.

4,499,383

EDGE DETECTION APPARATUS

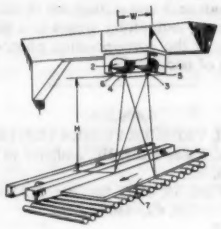
Peter W. Loose, Chelmsford, England, assignor to European Electronic Systems Ltd., England

Continuation-in-part of Ser. No. 210,337, Nov. 25, 1982, Pat. No. 4,490,617. This application Apr. 15, 1982, Ser. No. 368,511

Claims priority, application United Kingdom, Nov. 26, 1979, 7940810; Mar. 19, 1980, 8009285; Mar. 25, 1980, 8010048

Int. Cl.³ G01N *21/86*

U.S. Cl. 250—561 **35 Claims**



1. A method of determining the precise location of an edge of a strip, comprising scanning the strip at least in the region of the edge with individual elements of a radiation responsive sensor, each said element generating a signal value associated therewith for each scan, said signal values for all the elements forming a composite signal having discrete values representative of radiation received from the scanned region at respective locations corresponding to the individual elements of the sensor, analysing said composite signal by defining a curve which when said values are plotted against said locations on a distance scale passes through said values to represent a radiation profile of the scanned region as received by the sensor, finding the point of maximum slope on said curve, and taking the corresponding position on the distance scale as representing

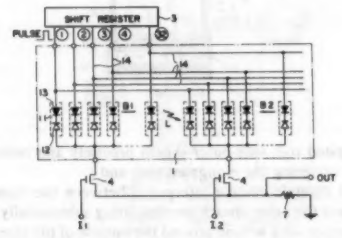
the precise location of said edge to an accuracy exceeding the element pitch.

4,499,384

IMAGE SENSING DEVICE

Hideo Segawa, Tokyo; Koji Mori, Yokohama; Masanori Itagaki; Kohichi Sakurai, both of Kawasaki, and Tatsumi Ishiwata, Zushi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 269,863
Claims priority, application Japan, Jun. 11, 1980, 55-77855
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—578 **17 Claims**



1. An image sensing device for converting light signals into electrical signals, comprising:

a substrate;

a plurality of photo-receiving elements formed on said substrate in a single array and each including a photodiode and a blocking diode which are connected in series and opposite in polarity, said plurality of photo-receiving elements being divided into a certain number of blocks each of which includes a predetermined number of said photo-receiving elements which are commonly connected to a junction on one side;

a plurality of switching means each connected between the common junction of each of said blocks and an output terminal of said image sensing device;

pulse outputting means including output terminals for outputting pulse signals; and

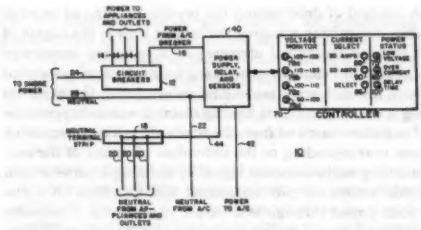
a plurality of leads each connecting one of said output terminals of said pulse outputting means to a side opposite to said one side of the corresponding photo-receiving element of each of said blocks.

4,499,385

RECREATIONAL VEHICLE POWER CONTROL SYSTEM

William H. Slavik, Palos Hills, Ill., assignor to Nuvatec, Inc., Downer's Grove, Ill.

Filed Jul. 19, 1983, Ser. No. 515,350
Int. Cl.³ H02J *3/14*
U.S. Cl. 307—10 R **15 Claims**



6. In a recreational vehicle comprising means for receiving electrical current from a source of power characterized by a power voltage, a major electrically powered appliance, a plurality of additional electrically powered appliances, and means for electrically interconnecting the major appliance and the additional appliances to the receiving means, the improvement comprising:

a switch, included in the interconnecting means, for disconnecting the major appliance from the receiving means;

current sensor means for generating a current load signal indicative of the current drawn by the additional appliances from the source of power;

switch control means, responsive to the current load signal, for automatically controlling the switch to disconnect the major appliance from the receiving means when the current load signal enters a first range of values, and for automatically controlling the switch to reconnect the major appliance to the receiving means when the current load signal enters a second range of values, said first and second ranges of values chosen such that the major appliance is automatically removed from the source of power when the current to the additional appliances exceeds a maximum value before the combined current to the major and additional appliances exceeds a predetermined value characteristic of the source of power, and the major appliance is automatically reconnected with the source of power after the current to the additional appliances falls to a point where the combined current to the major and additional appliances is less than the predetermined value;

voltage sensor means for generating a voltage signal indicative of the magnitude of the power voltage; and

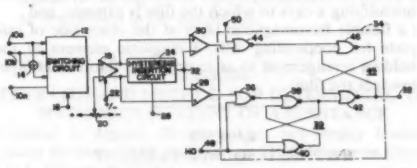
means, included in the switch control means, for automatically controlling the switch to automatically disconnect the major appliance from the receiving means when the voltage signal enters a third range of values, indicative of excessively low power voltage, and to automatically reconnect the major appliance to the receiving means after the voltage signal enters a fourth range of values, higher than the third range of values and indicative of normal power voltage.

4,499,386

TRIGGER CIRCUIT

Kenneth G. Schlotzhauer, Beaverton, and Arthur J. Metz, Gervais, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 26, 1982, Ser. No. 444,764
Int. Cl.³ H03K *5/153, 5/113, 3/037, 4/08*
U.S. Cl. 307—260 **7 Claims**



1. A trigger circuit, comprising:

a differential amplifier responsive to an input signal from an input means;

first and second comparators to receive as one input at a first input terminal in each the push-pull output of said differential amplifier;

a hysteresis circuit responsive to the common mode component of the push-pull output of said differential amplifier and applying a predetermined hysteresis level to be applied in common to a second input of both said first and second comparators, and

a logic circuit responsive to the outputs of said first and second comparators from providing a trigger signal at an output terminal.

4,499,387
INTEGRATED CIRCUIT FORMED ON A SEMICONDUCTOR SUBSTRATE WITH A VARIABLE CAPACITOR CIRCUIT

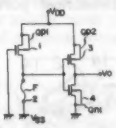
Satoshi Konishi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

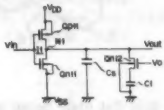
Filed Dec. 3, 1982, Ser. No. 446,724

Claims priority, application Japan, Dec. 15, 1981, 56-201837; Jan. 18, 1982, 57-5680

Int. Cl.³ H03K *4/94, 5/01*

U.S. Cl. 307—443 **23 Claims**





1. An integrated circuit formed on a semiconductor substrate, comprising:

a first terminal for receiving a first power supply voltage;

a second terminal for receiving a second power supply voltage;

a transistor circuit comprising a plurality of transistors connected in series via their drain-source current paths between said first and second terminals, at least one of the transistors being supplied with an input signal at the gate thereof;

a variable capacitor circuit connected to an output terminal of said transistor circuit between a node at which two of said transistors are interconnected and a reference voltage; and

a voltage generator for producing an output voltage signal applied to an input terminal of said variable capacitor circuit for controlling the capacitance thereof, the voltage generator being capable of irreversibly changing the level of the output voltage signal thereby changing the capacitance of said variable capacitor circuit.

4,499,388
SELECTION CIRCUIT FOR THREE OR FOUR POTENTIALS

Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 18, 1982, Ser. No. 359,532

Claims priority, application European Pat. Off., Apr. 1, 1981, 81102461.1

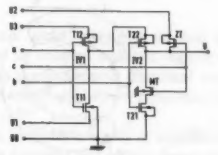
Int. Cl.³ H03K *19/094, 19/20*

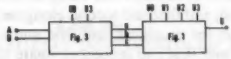
U.S. Cl. 307—474 **10 Claims**

1. An integrated selection circuit for four potentials corresponding to the zero point of the circuit (U0) and three potentials differing therefrom, (U1, U2, U3), which is realized in a complementary insulated-gate field-effect transistor (CMOS) technology, comprising:

a first inverter (IV1) comprising first and second complementary channel type transistors (T11, T12) connected in series between the first (U1) and the third potential (U3), said first transistor (T11) connected to the first potential (U1) with its substrate connected to the zero point of the circuit (U0), and said second transistor (T12) having its substrate connected to the third potential (U3); and

a second inverter (IV2) comprising two complementary channel type transistors (T21, T22) and intermediate transistor (MT), all connected in series, and having intermediate transistor (MT) connected between the transistors (T21, T22), said intermediate transistor (MT) being of the same channel conduction type as that of the transistor (T21) that is connected to the zero point of the circuit, the second inverter being connected between the zero point of the circuit and the output of the first inverter (IV1), the substrate of the transistor T21 is connected to the zero point of the circuit and the substrate of the intermediate transistor (MT) is also connected to the zero point of the circuit, and the substrate of the other transistor T22 forming an insulated island and is connected to the source electrode thereof and to the output of the first inverter, a connection between the intermediate transistor (MT) and the other transistor T22 of the second inverter (IV2) is the output of the selection circuit, an additional transistor (ZT) being of the same channel-conduction type as that of said other transistor T22 is connected by its source electrode to the second potential (U2) and by its drain electrode to the output of the selection circuit, the substrate of said additional transistor (ZT) forms an insulating island of its own which is connected to the source electrode of said additional transistor (ZT);





the four potentials satisfying the relationship: U2, U3>U1>U0, when the selection circuit is realized in accordance with the CMOS technology comprising n-insulating islands in a p-substrate, and U2, U3<U1<U0 when the selection circuit is realized in accordance with the CMOS technology comprising p-insulating islands in an n-substrate;

wherein a first circuit means provides a first or a second selection signal (a, b) to the first or the second inverter (IV1, IV2) respectively, and a second circuit means provides a third selection signal (c) to the gates of both said intermediate and said additional transistor (MT, ZT) with the third selection signal (c) meeting one of the Boolean logic functions:

$$c=a\cdot b=a+b \text{ or } c=a\cdot b=a+b$$

4,499,389
SELF-STARTING ELECTRIC MOTOR

Günter Hoche, Bretten, Fed. Rep. of Germany, assignor to Hermann Mellert GmbH & Co. KG, Bretten, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,174

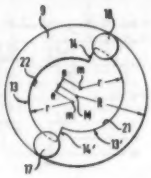
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225435

Int. Cl.³ H02K *7/10*

U.S. Cl. 310—41 **13 Claims**

1. A self-starting synchronous electric motor comprising: a permanent magnet rotor having an axis of rotation, first and

second end faces and a side surface; a stator having pole pieces disposed adjacent said side surface and spaced therefrom by an air gap; stator windings energisable by an AC current; a stationary part spaced from and facing said first end face of said rotor; an eccentric element mounted adjacent said first end face for rotation with said rotor, said eccentric element comprising an inner part and a single abutment part which projects radially outwardly from said inner part and has a part-cylindrical outer surface with a radius of curvature and an abutment surface extending generally radially between said part-cylindrical outer surface and said inner part; a blocking member having a profiled aperture surrounding said eccentric element and cooperating therewith to determine the direction of rotation of said rotor about said axis, said blocking member being disposed between said stationary part and said first end face; first and second guide pins on said blocking member for guiding said blocking member for linear oscillatory movement in an axial plane which includes said axis of rotation, said guide pins



being disposed in said axial plane on diametrically opposite sides of said axis of rotation and being directed parallel to said axis of rotation; and first and second elongate slot guides in said stationary part for receiving said first and second guide pins respectively, said first and second elongate slot guides extending radially of said axis of rotation on opposite sides thereof along respective radii which lie in said axial plane; and wherein said profiled aperture is bounded by two semi-circular arcs, which are displaced relative to one another and have respective ends, and by two substantially radially directed counterabutment surfaces which respectively extend between adjacent ends of said semi-circular arcs; whereby, on rotation of said rotor in one direction, said abutment surface strikes one of said counterabutment surfaces, thus preventing further rotation of said rotor in said direction, and whereby, on rotation of said rotor in an opposite direction, said eccentric element produces said linear oscillatory movement of said blocking member and said blocking member does not block further rotation of said rotor.

4,499,390

WATERPROOF STRUCTURE FOR SLIP RINGS OF AN A.C. GENERATOR FOR A CAR

Yoshiyuki Iwaki, Himeji; Hideo Imori, Kanzaki, and Hitoshi Gotou, Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1983, Ser. No. 556,410
Claims priority, application Japan, Nov. 30, 1982, 57-182816
Int. Cl.³ H02K *5/10*
U.S. Cl. 310—88 **2 Claims**

1. An a.c. generator for a motor vehicle, said a.c. generator comprising:

(a) a housing comprising a rear bracket;

(b) a stator disposed in said housing;

(c) a rotor disposed in said housing in operative association with said stator;

(d) slip rings operatively connected to said rotor;

(e) a rectifier disposed in said housing adjacent to said slip rings, said rectifier being mounted on said rear bracket;

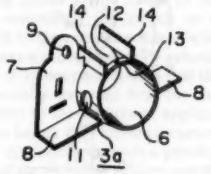
(f) an external terminal mounted on said rear bracket;

(g) a brush holder disposed in said housing, said brush holder containing contact brushes in operative contact with said slip rings; and

(h) a protective member made of plastic resin, said protective member comprising:

(i) a cylindrical portion which covers the outer periphery of said slip rings, said cylindrical portion having a drain hole formed in the lower part thereof and having a substantially rectangular opening in the upper part thereof which is sized and shaped to permit said contact brushes to pass therethrough with a small clearance therearound;

(ii) a first flat plate in the form of a flange which is perpendicular to said cylindrical portion and which extends outwardly from said cylindrical portion at one end



thereof, said first flat plate being provided with a fitting hole through which said first flat plate and said brush holder are fastened to said rear bracket, said first flat plate serving to separate and insulate said external terminal from said bracket;

(iii) a second flat plate extending perpendicularly from the bottom of said first flat plate and laterally from the lower part of said cylindrical portion, said second flat plate being spaced from said rectifier by a small predetermined gap which permits cooling air to pass therethrough to cool said rectifier; and

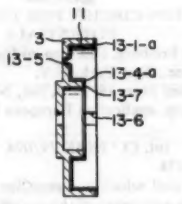
(iv) at least one upright piece extending upwardly from said cylindrical portion at an edge of the rectangular opening therein and covering a side surface of said contact brushes.

4,499,391

END BRACKET FOR MOTOR

Masafumi Sakamoto, Kiryu, Japan, assignor to Japan Servo Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1982, Ser. No. 416,933
Claims priority, application Japan, Dec. 28, 1981, 56-193056
Int. Cl.³ H02K *3/42*
U.S. Cl. 310—89 **5 Claims**



1. In an electric motor that comprises a rotor with a shaft that defines an axis and a stator core within which the rotor coaxially rotates, an end bracket whereby a bearing for said shaft is supported in coaxial relation to the core, said end bracket comprising:

(A.) an outer member of light, substantially rigid material,

(1) having one portion that is connected with the core and projects in an axially outward direction therefrom, and

(2) having another portion that provides a seat wherein said bearing is supported in fixed coaxial relation to the core; and

(B.) a magnetic shielding member of magnetically permeable material, disposed inwardly adjacent to said outer member and having

(1) a larger diameter substantially cylindrical wall portion which is coaxial with the core and has an axially inner end abutting the core,

(2) a concentric smaller diameter cylindrical wall portion surrounding said other portion of the outer member, having an axially outer end that is substantially radially opposite the axially outer end of the larger diameter cylindrical wall portion and having an axially inner end that is axially spaced from the core, and

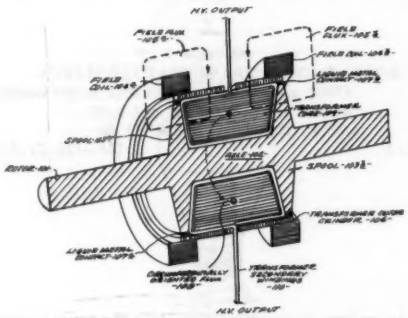
(3) a concentric annular wall portion that extends radially between the axially outer ends of said cylindrical wall portions and connects them.

4,499,392

HOMOPOLAR ALTERNATOR ELECTROMECHANICAL POWER CONVERSION MACHINE

Lawrence J. Giacoletto, Okemos, Mich., assignor to Carol G. Heiser, Wilmington, Del., a part interest

Filed Jul. 18, 1983, Ser. No. 514,610
Int. Cl.³ H02K *31/04*
U.S. Cl. 310—178 **18 Claims**



1. An electromechanical conversion machine which comprises, in combination:

an electrical conducting member of circular symmetry rotating in an alternating magnetic field;

a field coil with alternating electrical excitation for producing said field;

a stator conducting member electrically connected to the rotating member in such a manner as to form with said rotating member a continuous electrical conducting transformer primary circuit;

a nonrotating magnetic core of toroidal shape positioned within said continuous electrical circuit and magnetically coupled therewith;

a multiturn secondary circuit formed around, but insulated from, said magnetic core so as to be magnetically coupled to the alternating magnetic field produced therein; and

output terminals joined to said secondary circuit.

4,499,393

SURFACE ACOUSTIC WAVE SPECTRUM ANALYZER

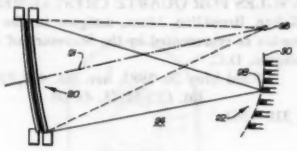
Robert B. Stokes, Torrance; Kuo-Hsiung Yen, Manhattan Beach; Kei-Fung Lau, Harbor City; Reynold S. Kagiwada, Los Angeles, and Michael J. Delaney, Lomita, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Feb. 15, 1984, Ser. No. 580,575
Int. Cl.³ H03H *9/25*; H01L *41/08*
U.S. Cl. 310—313 A **41 Claims**

1. A surface acoustic wave (SAW) device for use as a spectrum analyzer, said device comprising:

a piezoelectric substrate;

an input transducer array disposed on the surface of said substrate, said array having a plurality of individual interdigital transducers connected electrically for the application of input signals, and spaced along an approximately circular arc having a transverse axis of symmetry, to provide acoustic radiation that is focused onto a focal arc of greater than zero order, laterally spaced from said axis of symmetry, each position on the focal arc being representative of a different frequency component in the input signals; and



an output transducer array, disposed on said substrate in such positions as to convert acoustic signals received at the focal arc into corresponding electrical output signals representative of relatively narrow frequency bands in the input signals;

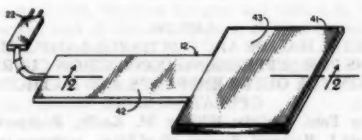
wherein said input transducer array is amplitude-weighted to improve beam focusing and reduce beam sidelobes, and wherein said input transducer array is amplitude-weighted by means including series capacitance coupling of the input signals to selected ones of said input transducers.

4,499,394

POLYMER PIEZOELECTRIC SENSOR OF ANIMAL FOOT PRESSURE

Jan G. Koal, NE. 820 California St., Pullman, Wash. 99163

Filed Oct. 21, 1983, Ser. No. 544,227
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—330 **2 Claims**



1. A piezoelectric sensor for measuring the pressure between a part of an animal's foot and a reactive surface, comprising, in combination:

a flat, sheet-like plastic type, piezoelectric sensing element defining a sensing body and an elongate connecting tail with opposed sensing surfaces defined only in the medial portion of the sensing body and being completely surrounded by a peripheral non-sensing band,

electrical connecting circuitry communicating with the sensor including

two similar sheet-like, electrically conductive metallic foil connectors each smaller than and of shape similar to the sensor and each defining a sensor connecting portion with a connecting tail projecting therefrom, one connector communicating with the sensing surface on each side of the sensor and each connector having its tail portion positionally adhered by electrically non-conductive adhesive on the medial part of the connecting tail of the sensor,

connecting wires electrically communicating with the outer end portion of each connector tail, and

an electrically conductive adhesive, joining adjacent sur-

faces of each metallic foil connector and sensing surface, and

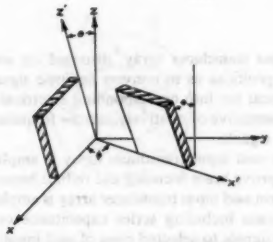
a casement covering at least the sensor and foil connectors of the connecting circuitry, the potentially exposed surface of the casement, outwardly adjacent the sensing area, being covered by a semi-rigid protective plate of substantially the same areal extent as the sensing body of the casement.

4,499,395

CUT ANGLES FOR QUARTZ CRYSTAL RESONATORS

Alfred Kahan, Brookline, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1983, Ser. No. 498,336
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—361 **9 Claims**



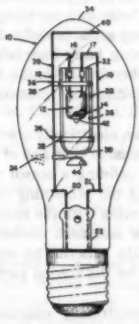
1. A crystal resonator comprising a thin, quartz plate vibrating in a thickness shear c-mode resonance and (A) having a doubly rotated crystallographic orientation around (1) the z-axis of said plate by an angle phi (ϕ) ranging from about 30° to 60° and (2) the x-axis of said plate by an angle theta (θ) ranging from about 12° to 31.92°; and (B) said crystalline resonator further characterized by having turnover temperatures in the range of about 60° C. to 200° C.

4,499,396

METAL HALIDE ARC DISCHARGE LAMP WITH MEANS FOR SUPPRESSING CONVECTION CURRENTS WITHIN THE OUTER ENVELOPE AND METHODS OF OPERATING SAME

Timothy Fohl, Carlisle; William M. Keeffe, Rockport, and Harold L. Rothwell, Rowley, all of Mass., ass'gnors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 18, 1982, Ser. No. 409,280
Int. Cl.³ H01J *61/34, 61/18*
U.S. Cl. 313—25 **11 Claims**



1. A metal halide arc discharge lamp comprising:

(a) an outer envelope;

(b) an arc tube positioned within said outer envelope, said arc tube having a fill including metal halide additives;

(c) a gaseous fill within said outer envelope, said fill being subject to convection currents during operation of said lamp; and

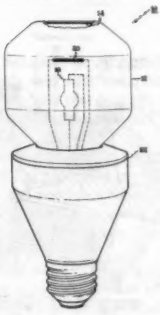
(d) convection-suppressing means for suppressing convection currents within said fill of said outer envelope, said convection-suppressing means being shaped and mounted with respect to said arc tube such that the value of the Rayleigh Number in the atmosphere laterally surrounding said arc tube is less than 5×10^4 during continuous operation of said lamp.

4,499,397

COLOR CORRECTIVE COATING FOR ARC LAMP

William G. James, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 5, 1982, Ser. No. 439,519
Int. Cl.³ H01J *5/16, 61/40*; H01K *1/32*
U.S. Cl. 313—112 **4 Claims**



1. An arc lamp having an inner envelope of a quartz type arc tube containing a mercury vapor or other metallic vapors, an inner tungsten filament light source, means to produce an electrical discharge, and an outer envelope having a color corrective coating on its inner surface; said color corrective coating effective for shifting the color point on a MacAdam type color plot of an arc tube lamp from approximately x=0.4, y=0.365 and CCT=3400° C. to approximately x=0.435, y=0.405 and CCT=3000° C., which is substantially a color point of an incandescent lamp having a tungsten type filament, wherein said color corrective coating comprises:

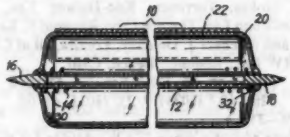
a mix of electrostatic silica blend and a yellow oxide pigment.

4,499,398

INCANDESCENT LIGHTING

Ronald G. Munroe, 600 Hylan Blvd., Staten Island, N.Y. 10305

Filed Jun. 8, 1982, Ser. No. 386,345
Int. Cl.³ H01K *1/24, 1/64, 1/18*
U.S. Cl. 313—113 **19 Claims**



1. An improved incandescent lamp comprising:

(A) an elongated light-transmissive envelope having ends,

(B) an elongated refractory stiff hollow element disposed within the envelope substantially coaxially thereof,

(C) at least one elongated helical resistive filament wound about and internally supported over substantially the full length of the filament by the stiff hollow element over substantially the full length of said stiff hollow element, said filament generating light when heated to incandescence by flow of electric current therethrough,

(D) means supporting the ends of the stiff hollow element at the ends of the envelope,

(E) two electrically conductive terminals, one of said terminals being situate proximate and connected to one end of the resistive filament, and the other terminal being situate proximate and connected to the other end of the resistive filament,

(F) means mounting each terminal to a different end of the envelope coaxially of the envelope.

4,499,399

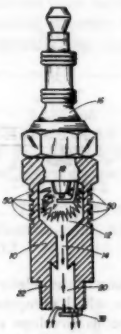
ANTI-POLLUTANT SPARK PLUG ADAPTOR

Manuel Flores, 1208 Lee St., Marrero, La. 70072

Filed Aug. 9, 1982, Ser. No. 406,496

Int. Cl.³ H01T *13/00*; F02B *19/18*

U.S. Cl. 313—143 **5 Claims**



1. A spark plug adaptor apparatus for an internal combustion engine, comprising:

a. a tubular member having an enlarged upper portion internally threaded to receive spark producing means and a smaller lower portion externally threaded and adapted for threading into a spark-plug receiving bore of the internal combustion engine;

b. an internal central conduit of said tubular member defining an upper preliminary combustion chamber, which houses a spark-producing means of said spark plug, and a acceleration orifice with said upper chamber and which communicates with a primary combustion chamber of said internal combustion engine;

c. a deflector means disposed below said secondary chamber for imparting turbulence to the preliminary combustion products;

d. air cooling means integral to said upper portion of said tubular member for dissipating heat from said preliminary combustion chamber surrounding said spark-producing means of said spark plug.

4,499,400

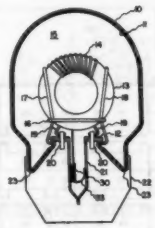
USE OF AMALGAMS IN SOLENOIDAL ELECTRIC FIELD LAMPS

John M. Anderson, Scotia, and Peter D. Johnson, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 214,903, Dec. 10, 1980, abandoned, which is a division of Ser. No. 954,411, Oct. 25, 1978, Pat. No. 4,262,231. This application Jul. 19, 1982, Ser. No. 399,552

Int. Cl.³ H01J *63/02*

U.S. Cl. 313—265 **6 Claims**



1. A solenoidal electric field discharge lamp comprising:

an evacuable, light-transmissive envelope having an interior phosphor coat;

a gaseous discharge medium disposed in said envelope, at least a portion of said medium being mercury vapor;

an electrically energizable toroidal magnetic core disposed within said medium, said core being electrically couplable to a ballast located at a base end of said envelope;

a metallic wetting agent attached to an inner, phosphor-free surface of said envelope; and

an amalgamating alloy attached over said wetting agent, for controlling mercury vapor pressure within said envelope.

4,499,401

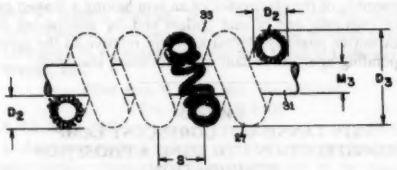
TRIPLE COIL INCANDESCENT FILAMENT

James A. Graves, Highland Heights, and Gilbert H. Reiling, Chardon, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,609

Int. Cl.³ H01K *1/14*

U.S. Cl. 313—315 **3 Claims**



1. An incandescent lamp comprising an electrically conductive base having a hermetically sealed light-transmissive envelope attached thereto, means for structurally and electrically mounting a filament within the said enclosure, a triple-coil filament electrically connected to and supported by said means for mounting, wherein said triple-coil filament comprises:

a coiled-coiled-coil of tungsten wire having an outer diameter D3 in the range of 20d to 26d, where d is the diameter of the tungsten wire

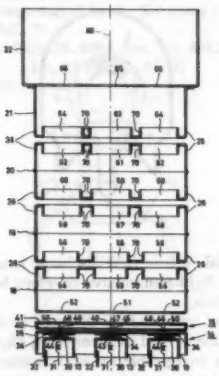
said triple coil filament with the given range having a coil geometry that allows its successful arrangement within said incandescent lamp without sagging and without the

need of prior recrystallization or stress-relieving treatment.

4,499,402
COLOR DISPLAY TUBE

Antonius W. F. van der Heijden, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1982, Ser. No. 370,428
Claims priority, application Netherlands, May 22, 1981, 8102527
Int. Cl.³ H01J *29/50, 29/82*
U.S. Cl. 313—414 **2 Claims**



1. A color display tube comprising an envelope containing a display screen and an electron gun system for producing three electron beams directed at said screen, said electron gun system including a plurality of cup-shaped focusing electrodes successively-arranged along a longitudinal axis of the tube, each focusing electrode having an aperture centered on the axis for passing a central one of the electron beams and having two outer apertures for passing the other two electron beams, the outer apertures in at least one of the focusing electrodes being laterally-shifted with respect to the corresponding apertures in another one of the focusing electrodes for passing the same electron beams, said laterally-shifted apertures being defined by axially-extending collars,

characterized in that a side of said cup-shaped focusing electrode having the laterally-shifted apertures includes at least one slot-shaped opening to facilitate passage, during assembly of the electrodes, of an arm having a shaped end for engaging one of said collars and for positioning the respective laterally-shifted aperture relative to the corresponding aperture in said other focusing electrode.

4,499,403
SKIN TANNING FLUORESCENT LAMP CONSTRUCTION UTILIZING A PHOSPHOR COMBINATION

Elton T. Leppelmeier, Highland Heights, and Frank I. Ewing, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

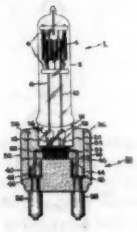
Filed Sep. 6, 1979, Ser. No. 72,958
Int. Cl.³ H01J *61/44*
U.S. Cl. 313—487 **4 Claims**

1. An improved skin tanning fluorescent lamp having a sealed transparent envelope enclosing means to generate a low pressure mercury discharge within said envelope, and a coating contained within said envelope for conversion of at least a portion of the radiation emitted from said discharge to skin tanning radiation, the improved coating comprising a physical mixture consisting essentially of a first phosphor emitting in the 320–400 nanometer region of the spectrum and a second phosphor emitting in the 280–320 nanometer region of the spectrum, so that principal lamp emission resides in said 320–400 nanometer region, wherein the second phosphor is approximately 4–16% by weight of said coating.

4,499,404
INCANDESCENT LAMP WITH CERAMIC BASE

LaVerne E. Walsh, Chagrin Falls, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 5, 1982, Ser. No. 405,650
Int. Cl.³ H01K *1/46, 1/50*; H01R *33/74*
U.S. Cl. 313—579 **7 Claims**



1. An incandescent lamp of the relatively high wattage type requiring a ceramic base which comprises:

(a) a transparent vitreous envelope containing a multifilament incandescent lamp coil suspended from a filament mount and connected to a pair of conductive inleads hermetically sealed to the vitreous envelope in a press seal region at one end of said envelope;

(b) external connector pins secured to said lamp inleads to provide electrical current to said lamp; and

(c) a two-part base for said lamp formed of electrically insulative ceramic material joined together in butt-seal engagement along a horizontal plane transverse to the longitudinal lamp axis with one base part having a central cavity opening in which the press seal end of said lamp is disposed while the other base part contains longitudinal openings which physically support said connector pins.

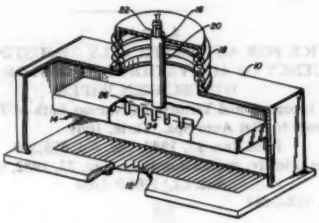
4,499,405
HOT CATHODE FOR BROAD BEAM ELECTRON GUN

Gary K. Loda, Danville, Calif., assignor to RPC Industries, Hayward, Calif.

Filed May 20, 1981, Ser. No. 265,462
Int. Cl.³ H01J *29/50, 31/00*
U.S. Cl. 315—13.1 **14 Claims**

1. An improved broad beam electron gun of the type having

a generally planar anode assembly which is generally transparent to accelerated electrons, a cathode assembly, which is arranged parallel to and spaced apart from the anode assembly to form an unobstructed chamber between the cathode assembly and the anode assembly, means for creating an electrostatic potential between the anode assembly and the cathode assembly to accelerate electrons from the cathode assembly toward and through the anode assembly, and an evacuated housing, of which the anode assembly forms one wall, surrounding the cathode assembly, wherein the improvement comprises



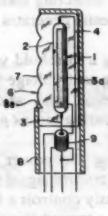
cathode means, which are operated in a space-charge-limited mode and which are positioned within the cathode assembly, for generating a substantially hemispherically shaped space-charge distribution, the cathode means including an electron emitting structure having a major axis of symmetry and principal electron emissive surfaces which are positioned to collectively extend parallel to and to be spaced equidistant from the major axis of symmetry of the electron emitting structure, the major axis of symmetry being orthogonal to the plane of the anode.

4,499,406

ELECTRONIC DISCHARGE TUBE AND ELECTRONIC LIGHT EMITTER USING IT

Numata Saburo, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

Filed Mar. 22, 1982, Ser. No. 360,818
Claims priority, application Japan, Mar. 30, 1981, 56-46744
Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—57 **19 Claims**



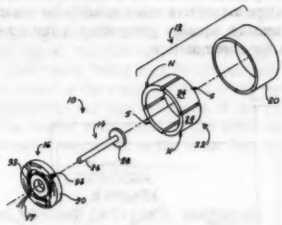
1. An electronic light emitter comprising an electric-discharge tube having a cathode, an anode, a trigger electrode and a transparent tube with a peripheral surface for enclosing said cathode and anode, said trigger electrode being provided on said peripheral surface of said transparent tube and serving as a reflecting portion for reflecting light emitted from said electric-discharge tube toward outside said discharge tube; and a transparent body comprising an elongated, solid block of transparent material having a substantially tubular opening for receiving and enclosing said electric-discharge tube therein, said transparent body having a reflecting surface for reflecting the light reflected by said reflecting portion of said electric-discharge tube toward outside said transparent body.

4,499,407

BRUSHLESS DC MOTOR ASSEMBLY WITH IMPROVED STATOR POLE

Donald J. MacCleod, Aptos, Calif., assignor to Applied Motion Products, Inc., Scotts Valley, Calif.

Filed Jan. 21, 1983, Ser. No. 459,797
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 **6 Claims**



1. An improved brushless direct current electric motor comprising:

a rotor portion including a ring magnet divided into a plurality of alternately radially polarized zones of equal size and shape;

a shaft attached to the rotor portion and providing an axis of rotation therefor;

A stator portion including a rigid magnetically conducting stator stack and plurality of conducting windings wrapped thereabout, the stator stack including a plurality, equal to the number of said polarized zones, of symmetrically arrayed pole portions of equal size, each said pole portion in the form of a generalized anchor shape with the arcial two pronged portion thereof arrayed outward toward said ring magnet so as to have a constant airgap therebetween, with one selected prong of each said anchor shaped pole portion having one or more apertures formed therethrough such that said selected prong includes less magnetic conducting material than the opposing prong;

electrical power and control means for operating the motor.

4,499,408

CONTROL CIRCUIT FOR AN ELECTRONICALLY COMMUTATED MOTOR, AN INTEGRATED CIRCUIT FOR AN ECM, AND A METHOD OF OPERATING AN ECM

Ricky F. Bitting, Raleigh, N.C.; William Peil, No. Syracuse, N.Y.; Thomas A. Brown, Fulton, N.Y., and William K. Guzek, Liverpool, N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jun. 9, 1983, Ser. No. 502,601
Int. Cl.³ H02P *6/02*
U.S. Cl. 318—254 **70 Claims**

1. An integrated circuit for use in a control circuit for an electronically commutated motor adapted to be energized from a power source, said motor having a multistage winding assembly with a neutral connection, and a magnetic assembly, the two arranged for mutual relative rotation, said motor in a given state of a multistate energization sequence having an unenergized winding stage and at least one winding stage energized in the appropriate sense to cause relative rotation, said integrated circuit comprising:

input terminal means for connection to the winding stages and to the neutral motor connection or equivalent for deriving the back emf induced in successive unenergized winding stages;

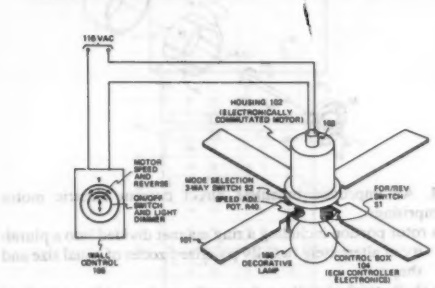
input switching means connected to said input terminal means for selecting an unenergized winding stage for differential derivation of the induced back emf, said input

switching means being responsive to an unenergized winding-stage selection signal;

a two input, differential transconductance amplifier means, the selected differentially derived back emf being coupled between the two inputs of said amplifier means for conversion to a corresponding current;

a terminal for connecting the amplifier output to capacitive integration means, the voltage appearing at said terminal being substantially proportional to the integral of said selected, differentially derived back emf;

timing comparison means for comparing the voltage of said integration means to a value suitable for commutation, and upon sensing equality generating a timing signal at the instant for commutation;



control logic means for generating winding stage selection signals for motor operation in a multistate energization sequence having m motor-energization states, in each state of which a signal is generated for selecting an unenergized winding stage for sensing said induced back emf, and a signal is generated for selecting at least one winding stage for energization, the motor energization state changing in response to said timing signal at the instant for commutation to the next state in a sequence; and

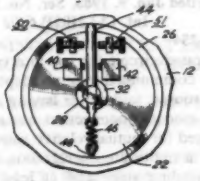
output terminals means for coupling said winding stage energization signals to a plurality of power switching means for appropriate energization of the winding stages in said multistate sequence.

4,499,409

PLUGGING DEFEAT SYSTEM FOR ELECTRIC MOTORS

James J. Bauer, Richland, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 31, 1984, Ser. No. 575,529
Int. Cl.³ H01H *35/06*; H02P *3/10*
U.S. Cl. 318—383 **14 Claims**



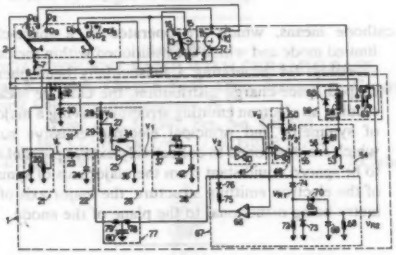
8. A plugging defeat system for use with a reversible electric motor having a shaft and a power source, comprising a slipping clutch means for sensing the speed and direction of the motor, including a viscous drive unit having a housing, a driver disc connected to said motor shaft, a driven disc closely spaced from and co-axial with said driver disc, and a viscous fluid in said housing for acting on said driven disc under the force applied by said driver disc, when the motor reaches a predetermined speed in either direction, a shaft member operatively connected to said driven disc for rotation therewith when the motor reaches a predetermined speed in either direction, switch means for enabling the motor in forward and reverse directions, and a lever means operatively connected to said shaft member for selectively opening said switch means, said switch means including a normally closed forward enabling switch and a normally closed reverse enabling switch mounted on said housing on opposite sides of said lever means for transmitting electrical current from the power source to the motor when in a closed position and for preventing the respective current flow when either of said switches is opened by said lever means.

4,499,410

DEVICE FOR AUTOMATICALLY ADJUSTING THE FREQUENCY OF ACTIVATION OF A MOTOR VEHICLE WINDSCREEN WIPER

Stefano Iacoponi, and Vittorio Di Nunzio, both of Turin, Italy, assignors to Fiat Auto Spa., Turin, Italy

Filed Jun. 17, 1983, Ser. No. 505,300
Claims priority, application Italy, Jun. 22, 1982, 67793 A/82
Int. Cl.³ H02P *1/04*
U.S. Cl. 318—444 **12 Claims**



1. An electronic circuit for automatic adjustment of the frequency of activation of an intermittent motor vehicle windscreen wiper based upon the quantity of moisture on the windscreen, comprising:

a wiper motor;

means for detecting the variance in current passing through said motor wherein said means generates a proportional voltage signal (V_i);

means for filtering and amplifying said voltage signal (V_i) generated by said detecting means wherein said filtering and amplifying means generates a filtered voltage signal (V_2);

means for generating a threshold voltage signal (V_s);

means for comparing said voltage signal (V_2) derived from said detecting means with said threshold signal (V_s) wherein said comparing means generates a control signal (V_3);

means for controlling the power supplied to said motor responsive to said control signal wherein said controlling means simultaneously controls a first direct supply circuit for said motor and a second circuit forming a short circuit connection to said motor;

means for overriding the intermittent activation of the wiper wherein said overriding means provides continuous operation for at least two wiping cycles upon initial activation of the circuit whereby said means generates a voltage signal which is added to said signal derived from said detecting means; and

switch means for controlling the activation of the circuit.

4,499,411

Patent Not Issued For This Number

4,499,412

REGULATING DEVICE FOR AN ELECTROMAGNETIC CONTROL ELEMENT, ESPECIALLY IN AN INTERNAL COMBUSTION ENGINE WITH AUTO-IGNITION

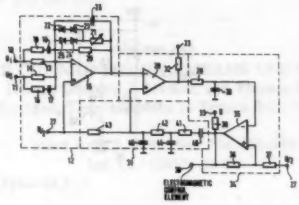
Johannes Locher, Stuttgart, and Dieter Schaller, Neubulach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,329

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 3207863

Int. Cl.³ G05B 11/42

U.S. Cl. 318—592 12 Claims



1. A regulating device for an electromagnetic control element for regulating an actual value of said electromagnetic control element corresponding to the position of said control element, especially in an internal combustion engine with auto-ignition, comprising, a first, non-linear regulator producing a first output signal for regulating said actual value to a desired value, and a second pulse regulator receiving said first output signal for producing a second output signal and regulating said second output signal to said first output signal for controlling said electromagnetic control element.

4,499,413

METHOD AND APPARATUS FOR THE CONTROL OF SYNCHRONOUS MOTORS

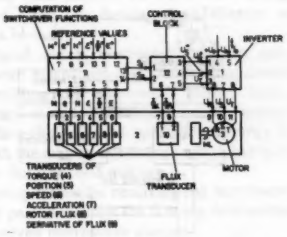
Dimitrij B. Izosimov, Ulica Profsojuznaja, and Asif Sabanovic, Sarajevo, both of Yugoslavia, assignors to Energoinvest, Yugoslavia, and IAT, U.S.S.R.

Continuation of Ser. No. 903,208, May 5, 1978, abandoned. This application Nov. 26, 1980, Ser. No. 210,617

Claims priority, application Yugoslavia, May 6, 1977, 1155/77

Int. Cl.³ H02P 7/26

U.S. Cl. 318—802 12 Claims



1. A method of controlling an asynchronous machine supplied via a frequency converter comprising:

sensing the value of rotor flux of said machine and the time derivative thereof;

providing a set value of rotor flux and of the time derivative thereof;

producing a first control signal corresponding to a sum of the differences between the sensed and set values of the rotor flux and of their time derivatives;

sensing the rotor angular position of said machine, and the velocity and acceleration thereof;

providing set values of rotor angular position, velocity and acceleration;

providing a second control signal corresponding to a linear combination of differences between the sensed and set values of rotor angular position, velocity and acceleration; and

forming the supply voltage vector of said asynchronous machine by use of switching circuitry, said voltage vector having a first component which is the scalar product of a vector whose components are of fixed magnitude and have polarity signs equal to the signs of the first and second control signal, respectively, with the rotor flux vector, such relationship being sign functions, and a second component which is the scalar product of the same vector whose components are sign functions of the control signals and the vector orthogonal to the rotor flux vector having the same magnitude as the rotor flux vector.

4,499,414

AC MOTOR CONTROL METHOD

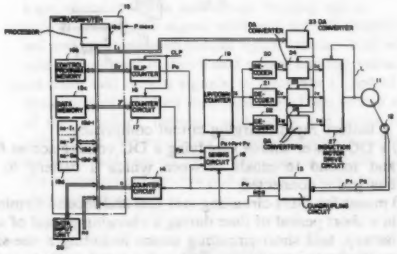
Yoshiki Fujioka, Higashiyamato, and Mitsuhiko Hirota, Tokyo, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

Filed Nov. 2, 1982, Ser. No. 438,692

Claims priority, application Japan, Nov. 4, 1981, 56-176748

Int. Cl.³ H02P 5/40

U.S. Cl. 318—803 5 Claims



1. A method of controlling an induction motor which exhibits a constant torque characteristic at a rotational speed N below a first base speed N_b and a constant output characteristic at a rotational speed N above the first base speed N_b, comprising the steps of:

(a) finding a second base speed N_L after limiting the output power of the induction motor, N_L being derived from the base speed N_b and the ratio η between maximum output power $Pmax_1$ and the maximum output power $Pmax_2$ before and after the output power of the induction motor is limited, respectively;

(b) rendering the slip frequency of the induction motor constant until the rotational speed N of the induction motor reaches the second base speed N_L;

(c) varying the slip frequency in inverse proportion to the rotational speed N for N between N_L and N_b ($N_L < N \leqq N_b$), said step (c) comprising:

(ci) finding a slip frequency f_{1s}, at the first base speed N_b by multiplying said ratio η and a constant slip frequency f_{1s} together, wherein the latter resides in a region where the slip frequency is constant and is stored in memory beforehand; and

(cii) varying the slip frequency in inverse proportional to the rotational speed N in such a manner that the slip frequency takes on the value f_{1s} at the base speed N_b; and

(d) varying the slip frequency in proportion to the rotational speed N for N above N_b ($N_b < N$), said step (d) comprising:

(di) finding a slip s' at a rotational speed N above the first

base speed N_b by multiplying said ratio η and a constant slip s together, wherein the latter resides in a region where the slip is constant and the slip frequency is proportional to the induction motor rpm, the slip s being stored in memory beforehand; and

(diii) varying the slip frequency in proportion to the rotational speed N, with the slip s' serving as a proportional constant at a rotational speed N above N_L;

whereby the output power of the induction motor is rendered constant at a rotational speed N above N_L.

4,499,415

BATTERY RAPID CHARGING CIRCUIT

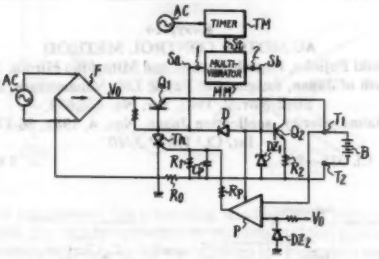
Tadatsugu Itoh, Tokyo, Japan, assignor to Minicam Research Corporation, Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,472

Claims priority, application Japan, Feb. 15, 1982, 57-22268

Int. Cl.³ H01M 10/44

U.S. Cl. 320—5 **5 Claims**



1. A battery rapid charging circuit comprising:

(a) a DC power source supplying a DC voltage across first and second terminals between which a battery to be charged is connected;

(b) means for short-circuiting said first and second terminals in a short period of time during a charging period of said battery, said short-circuiting means including a one-shot multivibrator producing first and second outputs and a first transistor which is connected across said first and second terminals, whereby when said transistor is supplied with the first output from said one-shot multivibrator, said transistor is made ON to short-circuit said first and second terminals;

(c) means for comparing a terminal voltage of said battery upon said short-circuiting period with a reference voltage; and

(d) means for stopping the supply of said DC voltage to said first and second terminals in response to an output of said comparing means.

4,499,416

REFERENCE VOLTAGE CIRCUIT FOR OBTAINING A CONSTANT VOLTAGE IRRESPECTIVE OF THE FLUCTUATIONS OF A POWER SUPPLY VOLTAGE

Hideharu Koike, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 22, 1982, Ser. No. 443,630

Claims priority, application Japan, Nov. 25, 1981, 56-188843

Int. Cl.³ G05F 5/00

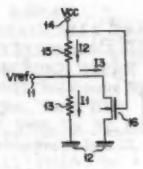
U.S. Cl. 323—303 **8 Claims**

1. A reference voltage circuit for obtaining a constant reference voltage irrespective of the fluctuations of a power supply voltage, having a first power supply voltage terminal, a reference voltage terminal and a second power supply voltage terminal, said reference voltage circuit comprising:

a first resistor, connected between said first power supply voltage terminal and said reference voltage terminal;

a second resistor, connected between said second power supply voltage terminal and said reference voltage terminal; and

a first metal oxide semiconductor field effect transistor, the drain thereof being connected to said reference voltage terminal, the source thereof being connected to said first power supply voltage terminal, and the gate thereof being connected to said second power supply voltage terminal, wherein said second resistor has a resistance R_2, said first transistor has a constant β, and a reference voltage V_{ref} is obtained at said reference voltage terminal, with the relationship between R_2, β, and V_{ref} being as follows:



$$R_2 = 1/(\beta \cdot V_{ref})$$

for $\beta = (W/L) \cdot (\epsilon \cdot \mu / t)$

where

W is the gate width of said transistor,

L is the gate length of said transistor,

ϵ is the permittivity of a gate oxide film of said transistor,

t is the thickness of said gate oxide film of said transistor, and

μ is the surface mobility of the substrate.

4,499,417

DETERMINING LOCATION OF FAULTS IN POWER TRANSMISSION LINES

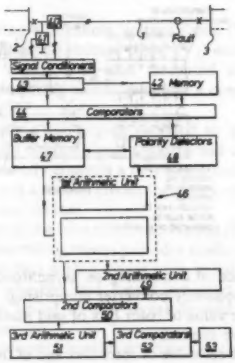
Arthur Wright, Bridgford, and Christos Christopoulos, Wollaton, both of England, assignors to General Electric Company p.l.c., London, England

Filed Oct. 26, 1982, Ser. No. 436,806

Claims priority, application United Kingdom, Oct. 27, 1981, 8132378

Int. Cl.³ G01R 31/08

U.S. Cl. 324—52 **9 Claims**



1. A method of determining the location of a fault occuring in an electric power transmission line, comprising the steps of

(i) detecting at a point adjacent to one end of the line a first

disturbance in voltage and/or current in the line resulting from occurence of the fault,

(ii) comparing at least one characteristic of each disturbance detected after the first disturbance with the or each characteristic predicted from values measured in the first disturbance, and thereby identifying a reflected disturbance in voltage and/or current produced by reflection of the first disturbance from the said one end, or another point beyond said one end, and then from the fault,

(iii) determining the time taken for the reflected disturbance to travel from the said point to the fault and back to the said point after reflection at the fault, and

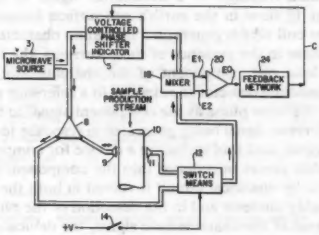
(iv) obtaining from said time the distance between the said point and the fault.

4,499,418

WATER CUT MONITORING MEANS AND METHOD

David A. Helms; Gregory J. Hatton, and Thomas M. Williams, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 5, 1982, Ser. No. 405,458
Int. Cl.³ G01N *22/04*
U.S. Cl. 324—58.5 A **4 Claims**



1. A water cut monitor comprising

test cell means for having a fluid mixture flowing through it,

means for transmitting microwave energy into a flowing fluid mixture in the test cell means, said means for transmitting microwave energy comprising microwave source means and transmitting antenna means, and

indicator means for providing an indication of the water cut of the fluid mixture in accordance with the phase difference between the transmitted microwave energy and either microwave energy that has passed through the flowing fluid mixture or microwave energy that is reflected from the flowing fluid mixture said indicator means includes

circulator means connected between said microwave source means and said transmitting antenna means for providing the microwave energy from said source means to said transmitting antenna means and for providing the reflected microwave energy in accordance with the microwave energy which has been reflected by the flowing fluid mixture,

receiving means for receiving the microwave energy that has passed through the flowing fluid mixture to provide received microwave energy,

means for providing a control signal, and

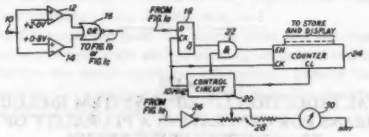
switch means connected to the control signal means, to the receiving means and to the circulator means for selecting either the received microwave energy from the receiving means or the reflected microwave energy from the circulator means in accordance with the control signal so that the reference microwave energy is utilized with either the microwave energy that has passed through the fluid mixture or the reflected microwave energy.

4,499,419

METHODS AND APPARATUS FOR ASSESSING THE QUALITY OF LOGIC SIGNALS

Charles Bockett-Pugh, Bracknell, England, assignor to Schlumberger Electronics (U.K.) Ltd., Farnborough, England

Filed Jun. 15, 1981, Ser. No. 273,536
Claims priority, application United Kingdom, Jun. 23, 1980, 8020424
Int. Cl.³ G01R *19/00, 29/00*
U.S. Cl. 324—102 **8 Claims**



1. A method of assessing the quality of a logic signal, comprising the steps of:

generating a first threshold signal corresponding to a lower limiting value below which said logic signal represents a first defined logic state;

generating a second threshold signal corresponding to an upper limiting value above which said logic signal represents a second defined logic state;

comparing said logic signal with said first threshold signal and generating an output signal indicative of whether said logic signal is below said lower limiting value;

comparing said logic signal with said second threshold signal and generating an output signal indicative of whether said logic signal is above said upper limiting value;

combining said output signals, to generate a control signal indicative of whether said logic signal lies within a range of signal values, between said lower and upper limiting values, not corresponding to any defined logic state; and

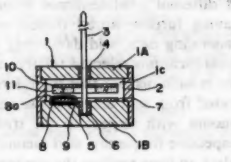
integrating said control signal with respect to time, whereby the magnitude of the integral is indicative of the quality of the logic signal.

4,499,420

DISK TYPE MOTOR SPEED DETECTING DEVICE

Manabu Shiraki; Akihiro Nakajima, and Takashi Miyazawa, all of Tokyo, Japan, assignors to Sinano Denki Kabushiki Kaisha, Japan

Filed Feb. 3, 1982, Ser. No. 345,420
Claims priority, application Japan, Mar. 5, 1981, 56-30524
Int. Cl.³ G01P *3/48, 3/54*
U.S. Cl. 324—174 **4 Claims**



1. A disk type motor speed detecting device comprising:

a motor speed detecting device body having upper and lower plates;

a doughnut shaped plate made of a material high in magnetic permeability secured to the inner surface of said lower plate;

a coil which is wound on a portion of said doughnut shaped plate in toroidal manner;

a doughnut shaped magnet confronted with said doughnut shaped plate with a relatively small space therebetween,

said doughnut shaped magnet having angular S and N poles one of which has a magnetization angle of more than 180°;

a disk-shaped yoke which is fixedly placed on the upper surface of said doughnut shaped magnet, said disk-shaped yoke being made of a material high in magnetic permeability; and

a rotary shaft which penetrates a substantially central portion of said doughnut shaped magnet and is rotatably supported by said upper and lower plates of said body.

4,499,421

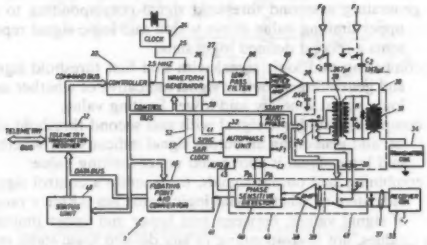
DIGITAL INDUCTION LOGGING SYSTEM INCLUDING MEANS FOR GENERATING A PLURALITY OF TRANSMITTER FREQUENCIES

Paul L. Sinclair, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jun. 8, 1981, Ser. No. 271,275

Int. Cl.³ G01V *3/28, 3/34;* H03K *13/02*

U.S. Cl. 324—339 **1 Claim**



1. An induction logging tool adapted for operation in a borehole in association with surface equipment, for measuring a characteristic of sub-surface formations, the tool including a transmitter coil which induces formation currents to flow in response to a transmitter signal and a receiver coil which generates a signal characteristic of the formation in response to these currents, the tool comprising:

a waveform generator for digitally generating a sinusoidal transmitter signal and a reference clock signal, said generator including:

a digital memory having a plurality of address sections, said address sections having stored therein magnitude values of sinusoidal waveforms of a respective plurality of different predetermined frequencies, said memory having further stored therein reference clock signal generating data, said data being stored in memory address locations selected relative to said magnitude values in such manner that the reference clock signal generated from said data is phase shifted a predetermined amount with respect to the transmitter signal of the respective frequency, said memory having a frequency select address portion the content of which specifies a particular address section,

latch means providing the content of said frequency select address portion in response to commands received from the surface equipment,

a phase shift unit responsive to said reference clock signal for generating a reference phase signal, and

a phase sensitive detector responsive to said reference phase signal and said characteristic signal from the receiver coil for generating an output signal indicative of the magnitude of a component of the characteristic signal that is in-phase with the reference phase signal.

4,499,422

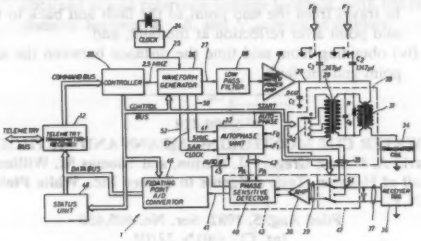
DIGITAL INDUCTION LOGGING TOOL INCLUDING MEANS FOR COMPENSATING FOR PHASE SHIFT ERRORS

Paul L. Sinclair, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jun. 8, 1981, Ser. No. 271,280

Int. Cl.³ G01V *3/28*

U.S. Cl. 324—339 **14 Claims**



1. In a digital induction logging tool having a transmitter coil which responds to a transmitter signal to induce eddy currents to flow in the earth's sub-surface formations and a receiver coil which generates a formation characteristic signal in response to the pr. ence of these currents, the tool measuring at least one component of the characteristic signal in a phase sensitive detector in response to a reference phase signal having the same phase as the component signal to be detected, said reference signal being generated in response to a reference clock signal, said tool including a device for compensating for phase shift errors introduced into the component signal measurement by electrical circuit involved in both the generation of the eddy currents and in the detection of the phase component signal of the characteristic signal, the device comprising:

(a) a memory having stored therein first digital data signals for generating the transmitter signal and second digital data siganls for generating the reference clock signal, the first and second data signals being stored in memory address locations selected so that the reference clock signal generated from said second data signals is phase shifted by a predetermined amount relative to the transmitter signal generated from said first data signals in a direction to compensate for phase shift errors introduced by circuits in the tool; and

(b) address generating means synchronized to the outputting of said first data signals for generating the memory address signals to said memory.

4,499,423

CIRCUIT ARRANGEMENT FOR CORRECTION OF A SENSOR OUTPUT

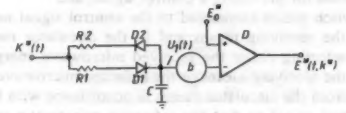
Hans Matthiessen, Gross Parin, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,506

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047782

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—425 **5 Claims**



1. A circuit arrangement for correcting the output of a sensor which experiences time dependent error changes in

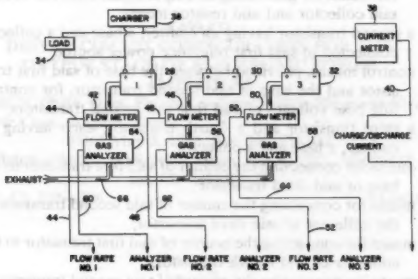
sensitivity, according to a sensitivity curve, as a function of at least one influence factor comprising: correction circuit means which simulates the sensitivity curve as a function of time and the at least one influence factor, connected to the sensor for receiving the sensor output and for producing from the sensor output a corrected output signal of constant sensitivity, said correction circuit means comprising a differential amplifier having two inputs and an output, one of said inputs being provided with a value corresponding to a sensitivity of the sensor when it is not experiencing a load, the other input provided for receiving a quantity proportional to the sensor output as it is changed according to the sensitivity curve.

4,499,424

STATE-OF-CHARGE COULOMETER

John J. Rowlette, Monrovia, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 9, 1982, Ser. No. 367,136
Int. Cl.³ G01N 27/46
U.S. Cl. 324—427 **15 Claims**



10. A coulometer for measuring the state-of-charge of an open-cell lead/acid battery, said coulometer comprising:

a gas flow meter coupled to a gas vent of the battery;

a gas analyzer coupled to the gas vent of the battery;

computing means responsive to outputs of said gas flow meter and said gas analyzer for producing a state-of-charge signal indicative of the state-of-charge of the battery; and

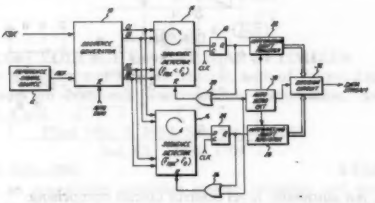
display means responsive to said state-of-charge meter for visually indicating the state-of-charge of the battery.

4,499,425

PHASE VELOCITY SIGN DETECTOR FOR FREQUENCY SHIFT KEY DEMODULATION

Michael F. Maas, White Bear Lake, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 4, 1982, Ser. No. 404,959
Int. Cl.³ H03D 13/00; H03K 9/06; H04L 27/14
U.S. Cl. 329—50 **25 Claims**



1. A circuit for determining whether an input signal has a frequency greater than or less than a reference signal, the circuit comprising:

means for producing a digital code as a function of the input and reference signals, the digital code being representative of a phase angle between the input and reference signals and changing in a first predetermined sequence when the frequency of the input signal is less than the frequency of the reference signal and changing in a second predetermined sequence when the frequency of the input signal is greater than the frequency of the reference signal;

means for providing a complementary digital code which is a complement of the digital code; and

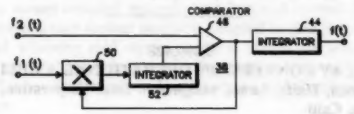
means for receiving both the digital code and the complementary digital code and producing an output indicating whether the input signal has a frequency greater than or less than the reference signal based upon the sequence of the digital code received.

4,499,426

BASEBAND DISCRIMINATOR FOR FREQUENCY OR TRANSFORM MODULATION

Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 165,474, Jul. 2, 1980,. This application Sep. 30, 1982, Ser. No. 429,380
Int. Cl.³ G06G 7/62; H03D 5/00
U.S. Cl. 329—50 **3 Claims**



1. A baseband discriminator comprising:

first input means for receiving signals of the form sin f(t) where f(t) is an information signal;

second input means for receiving signals of the form cos f(t);

first circuit means coupled to one of said first and second input means for providing from one of said received trigonometric signals, an intermediate signal which is the derivative of one of said received signals; and

second circuit means coupled to said first circuit means and the other of said input means for providing an output signal which is proportional to the derivative of f(t), and

integrating means coupled to the output of said second circuit means to integrate said output signal.

4,499,427

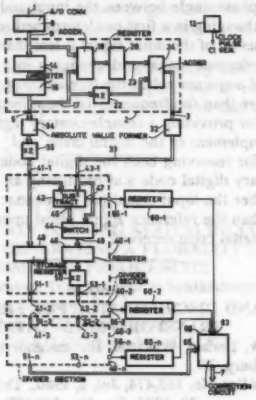
DIGITAL FM DEMODULATOR USING A FILTER HAVING A LINEARLY SLOPING FREQUENCY-AMPLITUDE CHARACTERISTIC

Walter Demmer; Rolf D. Gutsmann, and Jürgen Lenth, all of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,099
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3124963
Int. Cl.³ H03D 3/06; H03K 9/06
U.S. Cl. 329—107 **10 Claims**

1. An arrangement for demodulating a frequency-modulated input signal by means of a filter which, in a range of the possible frequencies of the input signal, has a sloping frequency-amplitude characteristic, characterized in that for demodulation with digital components, a sampling device generates digital sampling values from the input signal at uniformly distributed instants, that an output of the sampling device is connected to an input of a filter, which is in the form of a digital transversal filter having a constant group delay time, and also to an input of a delay device having a time delay equal

to the group delay time of the filter, and that an output of the filter is connected to a numerator input of a divider and an output of the delay device is connected to a denominator input



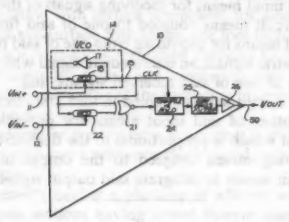
of the divider, said divider producing a sequence of digital words, said sequence indicating the variation of the instantaneous frequency of the input signal.

4,499,428

IC DELAY CONVERSION OPERATIONAL AMPLIFIER

Mel Bazes, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 6, 1983, Ser. No. 529,212
Int. Cl.³ H03F *3/38, 3/16*
U.S. Cl. 330—10 **13 Claims**



1. An MOS operational amplifier fabricated as an integrated circuit comprising:

a voltage controlled oscillator (VCO) coupled to receive a first input signal to said amplifier, the frequency of oscillation of said oscillator being a function of said first input signal;

a voltage controlled delay (VCD) means for providing a delay which is a function of a second input signal to said amplifier coupled to said amplifier, said VCD means being coupled to said VCO for delaying an oscillator signal from said VCO;

a logic gate coupled to receive (i) the delayed oscillator signal from said VCD means and (ii) said oscillator signal;

a sample-and-hold means for sampling a signal and for providing an output signal representative of said sampled signal, said sample-and-hold means being coupled to said logic gate and said VCO;

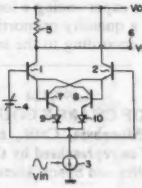
whereby said amplifier provides adequate operational amplifier performance over a large range of variations in MOS processing, temperature and power supply potential.

4,499,429

VARIABLE GAIN CONTROL CIRCUIT

Yasuhiro Sugimoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 8, 1983, Ser. No. 465,022
Claims priority, application Japan, Feb. 26, 1982, 57-28735
Int. Cl.³ H03F *3/45;* H03G *3/10*
U.S. Cl. 330—254 **10 Claims**



1. A variable gain control circuit comprising:

a first transistor having an emitter, a base and a collector connected to a first reference power source through resistor means for generating an output signal from the node of said collector and said resistor means;

a second transistor having an emitter, a base and a collector connected to said first reference power source;

control means, provided between the base of said first transistor and the base of said second transistor, for controlling base voltages of said first and second transistors;

a third transistor and a fourth transistor, each having an emitter, a base and a collector;

means for connecting the emitter of said first transistor to the base of said third transistor;

means for connecting the emitter of said second transistor to the collector of said third transistor;

means for connecting the emitter of said first transistor to the collector of said fourth transistor;

means for connecting the emitter of said second transistor to the base of said fourth transistor;

a first PN junction forwardly connected in series to the base-emitter junction of said third transistor;

a second PN junction forwardly connected in series to the base-emitter junction of said fourth transistor; and

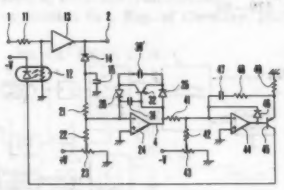
input signal supplying means connected between a second reference power source and said first and second PN junctions for receiving an input signal and supplying current containing a DC component and an AC component which is varied by said input signal.

4,499,430

AUTOMATIC LEVEL CONTROL CIRCUIT

Akira Fujii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 30, 1983, Ser. No. 556,632
Claims priority, application Japan, Dec. 6, 1982, 57-213673
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—279 **4 Claims**



1. An automatic level control circuit comprising:

variable gain amplifier means which is supplied with an input signal, for outputting a level controlled signal;

detector means for detecting the output signal of said variable gain amplifier means;

integration circuit means including an operational amplifier and a first capacitor;

means for applying an output voltage of said detector means to a first input terminal of said operational amplifier via a first resistor;

means for applying a first reference voltage to said first input terminal via a second resistor;

a first diode with one end connected to an output terminal of said operational amplifier and the other end connected to one end of said first capacitor;

a second diode connected between the other end of said first capacitor and said first input terminal;

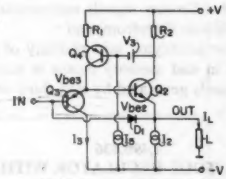
a transistor with its first and second electrodes connected in parallel with said first capacitor, a third electrode of said transistor being connected to the output terminal of said operational amplifier; and

circuit means which decreases the gain of said variable gain amplifier means only when an output voltage of said integration circuit means appearing at the output terminal of said operational amplifier exceeds a second reference voltage.

4,499,431
DRIVER CIRCUIT CONFIGURATION FOR THE OUTPUT STAGE OF ELECTRONIC POWER AMPLIFIERS

Matti N. Otala, Oulu, Finland, assignor to Shin-Shirasuna Electric Corp., Nagoya, Japan

Filed May 3, 1982, Ser. No. 374,412
Claims priority, application Japan, Jul. 8, 1981, 56-106424
Int. Cl.³ H03F *1/26*
U.S. Cl. 330—296 **7 Claims**



1. A circuit for improving the characteristics of a transistorized power amplifier, comprising:

a common collector stage, an inverted common collector stage together with a common emitter stage for driving said collector stage, and means associated with said stages for sensing the output current of said circuit; and

means connected to said circuit for transforming said output current into a corresponding internal correction signal for compensating for nondesirable circuit characteristics upon changes in said output current, and means for compensating for variation in input current or voltage of said circuit, to thereby yield an output voltage essentially independent of load and signal characteristics.

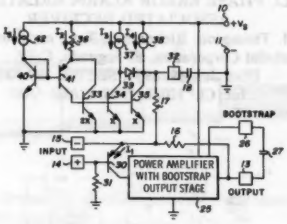
4,499,432
LOW VOLTAGE OP AMP BIAS OPTIMIZER

William H. Gross, and Tadashi Sakurai, both of Tokyo, Japan, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 4, 1982, Ser. No. 439,001
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—296 **6 Claims**

1. In an operational amplifier having inverting and noninverting imputs and that employs a bootstrapped power output stage and is designed to operate from a low source of supply voltage having one terminal grounded and operative to function over a wide range of supply voltage, circuit means for optimizing the output terminal quiescent voltage whereby above a threshold voltage limit, the output voltage is made equal to one-half of said supply voltage and below said threshold voltage limit the output voltage is made equal to said supply voltage less a fixed constant voltage thereby maximizing the dynamic range at all supply voltages, said circuit means comprising:

a current mirror having an input and first and second outputs;



means for coupling said input to a source of biasing current;

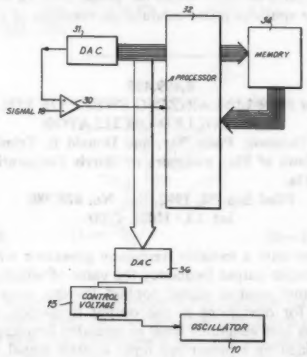
means for coupling the first of said outputs to the inverting input of said operational amplifier; and

diode means coupled between said first and second outputs whereby said second output is coupled to said first output and whereby said diode means is turned on when said supply voltage is below said threshold voltage and turned off when said supply voltage is above said threshold voltage.

4,499,433
AUTOLOCK FOR RESONATORS FOR FREQUENCY STANDARDS

Robert M. Garvey, Swampscott, Mass., assignor to Frequency and Time Systems, Inc., Beverly, Mass.

Filed Jul. 31, 1981, Ser. No. 289,069
Int. Cl.³ H03L *7/26*
U.S. Cl. 331—3 **16 Claims**



1. A system to find and identify the desired resonant peak in the response of a resonator used for frequency standards, said system comprising,

a voltage controlled oscillator connected to a synthesizer, a voltage applied to said voltage controlled oscillator to control the oscillator frequency, said synthesizer producing a frequency which is applied to said resonator to produce a resonator response,

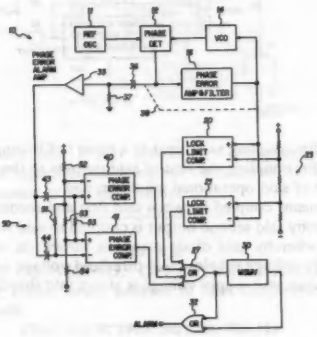
a peak analyzer receiving the output of said resonator, said peak analyzer comprising means to simultaneously store the amplitude of the voltage applied to said voltage controlled oscillator and the amplitude of the corresponding resonator output, means to compare the amplitudes of successively generated and stored resonator outputs and to select the resonator output having the maximum peak value.

4,499,434

PLL PHASE ERROR ALARM RELATED TO ASSOCIATED RECEIVER

William J. Thompson, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 19, 1982, Ser. No. 399,535
Int. Cl.³ H03L *7/08*; H03B *1/00*
U.S. Cl. 331—17 **7 Claims**



1. In a circuit for providing a source frequency for use in a radio, including a receiver having a detector with a known response to spurious phase modulation, the circuit having an alarm circuit to indicate that a source phase error exceeds a limit, the improvement comprising, means for making a frequency response of the alarm circuit similar to the spurious phase modulation response of the detector, whereby the alarm circuit indicates an error when the phase error of the source exceeds the spurious phase modulation response of the detector.

4,499,435

SYSTEM FOR LINEARIZING SWEEP OF VOLTAGE CONTROLLED OSCILLATOR

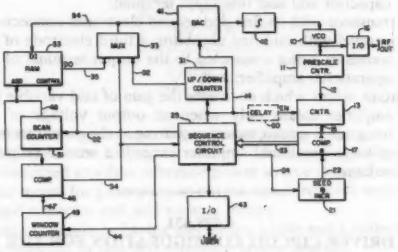
David W. Thomson, Palm Bay, and Donald E. Trimble, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 30, 1982, Ser. No. 428,980
Int. Cl.³ H03L *1/00*
U.S. Cl. 331—44 **31 Claims**

1. For use with a variable frequency generator which produces a variable output frequency the value of which depends upon an input control signal applied thereto, a system for correcting for deviations in the output frequency variation produced by said generator from an intended frequency variation as defined by a prescribed input control signal variation comprising:

first means for supplying to said variable frequency generator a plurality of input control signals the value of each of which changes with time so as to have a respective prescribed slope during a respective subinterval of time within a defined interval of time during which said variable frequency generator is to produce said intended frequency variation, said first means including memory means for storing a plurality of input control codes the value of each of which control codes is associated with a respective prescribed rate of change of frequency to be produced by said variable frequency generator for a corresponding respective subinterval of time, and means for sequentially accessing from said memory said control codes and producing therefrom a plurality of respective ramp voltage signals that are coupled to said generator as said input control signals thereto;

second means, coupled to the output of said variable frequency generator, for producing a plurality outputs representative of the variations in frequency produced by said variable frequency generator during said subintervals of



time in response to said plurality of input control signals supplied thereto by said first means;

third means for comparing the plurality of outputs produced by said second means with a plurality of respective reference signals supplied thereto indicative of intended variations in frequency produced by said variable frequency generator during said subintervals of time, and generating a plurality of difference signals representative of the respective deviations therefrom; and

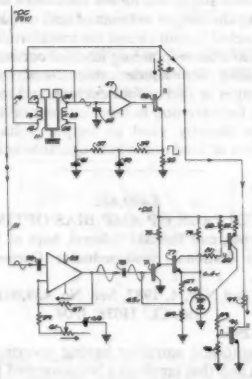
fourth means for modifying said plurality of input control codes stored in said memory means in accordance with difference signals generated by said third means.

4,499,436

MOTION AMPLITUDE REGULATOR WITH BREAKING PULSE REGULATION

Boris F. Grib, Huntington, N.Y., assignor to Philamon, Inc., Farmingdale, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,160
Int. Cl.³ H03B *5/30*
U.S. Cl. 331—116 M **11 Claims**



1. A drive current control circuit for an electromechanical

device having a drive means and velocity sensing means comprising,

a source of electric power with a power terminal and a ground terminal,

first means for providing a conductive path for a signal from said power terminal to said ground terminal through said drive means in a predetermined frequency and phase relation appropriate to accelerate motion of said device

second means for controllably providing a conductive path for a substantially square wave pulse signal from said power terminal to said ground terminal through said drive means in a phase relation substantially opposed to the signal of said first means, and

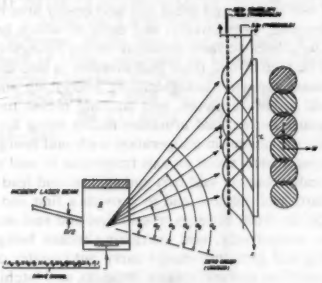
third means for controlling said second means to cause it to be operative only when said velocity sensing means produces a signal of instantaneous magnitude exceeding a reference value.

4,499,437

APPARATUS AND METHOD PROVIDING IMPROVED CONTROL OF A LASER BEAM

Richard N. Blazey, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 8, 1981, Ser. No. 281,266
Int. Cl.³ G02F *1/32*; H04B *9/00*; H01S *3/10*
U.S. Cl. 332—7.51 **27 Claims**



1. Apparatus for use in angularly deflecting and intensity modulating an incident laser beam comprising:

(a) an acousto-optic cell controllable by a drive signal for angularly deflecting and intensity modulating a laser beam incident thereon having an effective diameter D;

(b) means for producing a drive signal which varies in frequency over a range Δf to cause the incident laser beam to be deflected through an angular range $\Delta\theta$; and

(c) means, operable during the variation of the drive signal through said frequency range Δf, for varying the amplitude of the drive signal in accordance with a number of pixels N_{pix} of information, said number of pixels (N_{pix}) being substantially greater than a resolution parameter N_{res} defined as

$$N_{res} = \frac{\Delta f D}{\epsilon V_s} + 1,$$

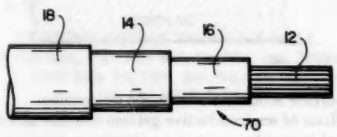
where V_s is the acoustic velocity of said acousto-optic cell, and τ is the beam separation constant.

4,499,438

HIGH FREQUENCY ATTENUATION CORE AND CABLE

Rajendra S. Cornelius, Palo Alto; Albert R. Martin, Oakland; Hans E. Lunk, Menlo Park, and Mark D. Mendenhall, Fremont, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 328,346, Dec. 7, 1981,. This application Sep. 14, 1982, Ser. No. 417,954
Int. Cl.³ H01P *3/00*; H01B *11/06*
U.S. Cl. 333—1 **12 Claims**



1. A high frequency attenuation cable core, comprising:

at least one conductor;

dielectric surrounding the conductor;

a high frequency energy absorption medium for attenuating high frequency energy propagating through the core in use, the absorption medium surrounding the dielectric; and

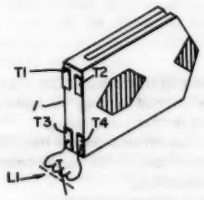
an outer layer made from material having a high complex dielectric constant directly surrounding the absorption medium, said outer layer being made from a titanate loaded polymer.

4,499,439

BIFURCATED ELECTROACOUSTIC DELAY LINES

Roger G. Claes, St. Trond, Belgium, assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 22, 1983, Ser. No. 487,649
Int. Cl.³ H03H *9/13, 9/36, 9/66*
U.S. Cl. 333—142 **22 Claims**



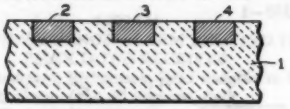
18. A bifurcated, solid transmission medium for an electroacoustic delay line, the medium comprising two substantially identical branches, each branch assuming a generally pentagonal profile, the pentagonal profile characterized by a first side, second and third sides extending substantially perpendicularly from the first side in a substantially parallel relationship with respect to each other, a fourth side extending from the second side so as to form a first obtuse angle with the second side, and a fifth side extending from the third side so as to form a second obtuse angle substantially equal to the first obtuse angle, so that the fourth and fifth sides form a third obtuse angle at a point of intersection, wherein said branches are joined along their respective fourth and fifth sides.

4,499,440

LOW REFLECTIVITY ELECTRODES IN SEMICONDUCTIVE SAW DEVICES

Thomas W. Grudkowski, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 22, 1983, Ser. No. 525,204
Int. Cl.³ H03H 9/13, 9/25, 9/42
U.S. Cl. 333—151 2 Claims



1. A surface acoustic wave device comprising:

a substrate of semiconductive gallium arsenide and a plurality of electrodes comprising aluminum disposed on said substrate, characterized by:

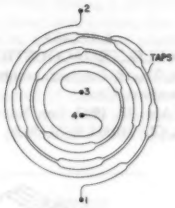
said electrodes being formed in recesses (slots, grooves) extending into said substrate from a major surface thereof, whereby the surface of the electrodes is essentially coplanar with said major surface of said substrate.

4,499,441

SUPERCONDUCTING SIGNAL PROCESSING CIRCUITS

John T. Lynch, Cambridge; Alfredo C. Anderson, Watertown; Richard S. Withers, Bedford, all of Mass., and Peter V. Wright, Dallas, Tex., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 14, 1982, Ser. No. 434,431
Int. Cl.³ H01P 1/203, 9/00, 5/18
U.S. Cl. 333—161 25 Claims



1. A superconducting transversal filter circuit for processing analog signals, the circuit having an input channel and an output channel and further comprising;

(a) a miniature transmission means for delaying the signal from the input channel to the output channel the transmission means comprising;

(i) an essentially planar substrate;

(ii) an input line connected to the input channel and disposed upon the substrate; and

(iii) an output line connected to the output channel and also disposed upon the substrate in a spaced-apart but proximal relation to the input line;

(b) a cooling means for cooling the input and output lines of the transmission means to a temperature where superconduction is achieved; and

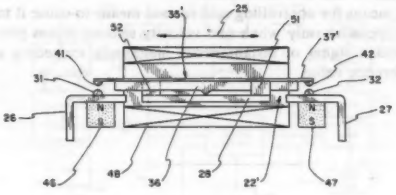
(c) a plurality of tap means integrally formed with the transmission means for tapping transmission means at predetermined locations, each tap means providing a coupling between the input and output lines of a particular strength at a particular location whereby the plurality of tap means, in concert, provide signal processing.

4,499,442

TRANSFER-TYPE ELECTROMAGNETIC RELAY COMPRISING A PERMANENT MAGNET UNDER A FIXED CONTACT STUD

Yuichi Kamo; Nobuo Mikami; Kazutoshi Wakamatsu, and Kunio Naito, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 6, 1983, Ser. No. 511,508
Claims priority, application Japan, Jul. 6, 1982, 57-117512; Jul. 19, 1982, 57-109128[U]; Dec. 21, 1982, 57-224729; Jan. 14, 1983, 58-4741
Int. Cl.³ H01H 51/22
U.S. Cl. 335—79 12 Claims



1. In a transfer-type electromagnetic relay comprising a housing and a contact assembly, said housing comprising a base member having an inner surface and a cap member defining a space in cooperation with said inner surface, said space having a space axis extended parallel to said inner surface, said inner surface being divisible into a center area extended transversely of said space axis and first and second end areas which are parallel to each other with said center area interposed therebetween, said contact assembly comprising a first, a second, and a third lead member which are extended from said first and said second end areas and said center area outwardly of said housing, respectively, and each of which has a front surface and a back surface, armature means swingably held on the front surface of said third lead member in said space, energizing means for electromagnetically energizing and deenergizing said armature means, and latching means for latching said armature means, said armature means being for carrying out seesaw movement in cooperation with said energizing and said latching means about an axis transverse to said space axis to electrically connect said first and said second lead members to said third lead member and to provide a first and a second contact on the front surfaces of said first and said second lead members, respectively, said energizing means being thereby for making said armature means carry out transfer of contact between said first and said second contacts, said latching means keeping at least a prede ermined one of said first and said second contacts while said armature means is left deenergized, the improvement wherein said latching means comprises:

at least one permanent magnet extending on at least a predetermined area preselected from said first and said second end areas transversely of said space axis, said permanent magnet having a selected one of north and south poles directed towards the back surface of one of said first and said second lead members that is extended from said predetermined area.

4,499,443

HIGH-FIELD DOUBLE-PANCAKE SUPERCONDUCTING COILS AND A METHOD OF WINDING

Peter A. Materna, Lawrenceville, N.J., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

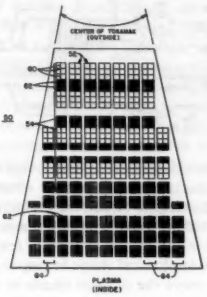
Filed Jan. 31, 1984, Ser. No. 575,598
Int. Cl.³ H01F 7/22; H01L 39/24
U.S. Cl. 335—216 18 Claims

1. A double-pancake coil having first and second pancakes comprising a plurality of conductor means, each conductor

means having a different grade, and each conductor means having one or more conductors;

wherein each pancake of said double-pancake coil comprises inner and outer turns;

wherein said inner turns comprise at least one of said conductor means wound about an axis and nested within one another;



wherein said outer turns comprise said inner conductor means and at least one other conductor means co-wound about said inner turns and nested within one another; and

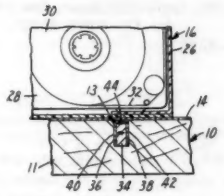
wherein each of said conductor means is wound along said axis from said first pancake to said second pancake at a different turn.

4,499,444

DESENSITIZER FOR FERROMAGNETIC MARKERS USED WITH ELECTROMAGNETIC ARTICLE SURVEILLANCE SYSTEMS

Eugene C. Heltemes, White Bear Lake, and Samuel Montean, Blaine, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 20, 1983, Ser. No. 496,554
Int. Cl.³ H01F *13/00*
U.S. Cl. 335—284 **8 Claims**



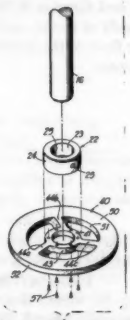
1. A desensitizer apparatus adapted for use with an electronic article surveillance system for detecting a desensitizable marker secured to an article the presence of which within an interrogation zone is desirably known, said marker including an elongated section of low coercive force, high permeability ferromagnetic material having proximate thereto at least one section of a remanently magnetizable high coercive force material which when magnetized magnetically biases the elongated section of low coercive force material and thereby alters the detectability of the marker, said desensitizer apparatus comprising a permanent magnet assembly which includes at least one section of ferromagnetic material having two substantially opposed major surfaces and which is substantially uniformly magnetized to present one magnetic polarity at one of said major surfaces and the opposite polarity on the other major surface, and a pair of pole pieces each of which is proximate to and extends over a major portion of said major surfaces and terminates proximate to the other pole piece to provide a gap of substantially constant width extending along said section for concentrating external magnetic lines of flux resulting from said magnetized material near the gap such that the resultant external magnetic field decreases rapidly with increasing distance from the gap, thereby enabling a said marker to be moved relative to said gap to remanently magnetize the section of said high coercive force material within the marker, the external field intensity extending beyond a short distance from the gap being insufficient to alter magnetic states such as may exist within an article to which the marker is secured.

4,499,445

STIRRING DEVICE FOR SAND MILL

Phillip G. Mitchell, P.O. Box 612, Opelika, Ala. 36801

Filed May 16, 1984, Ser. No. 610,783
Int. Cl.³ B01F *7/26*
U.S. Cl. 366—316 **6 Claims**



1. A stirring device, for being received on a rotatable shaft of a stirring machine for rotation with the shaft, said shaft protruding into a container in which a liquid is disposed, comprising:

(a) an annular collar having a central circular hole therein and through which the collar is adapted to receive said shaft, said collar having a flat radially extending base surface;

(b) a flat circular, unitary, plastic, stirrer member having a hub with a central, circular hole therein, said stirrer member having a planar inner surface along one side thereof and a planar outer surface along the other side thereof, said stirrer member having its central hole concentric with the central hole in said collar;

(c) securing means securing said hub against said base surface of said collar, said stirrer extending radially beyond said collar; and

(d) said stirrer member including an outer ring spaced radially outward of said collar and said hub, and circumferentially spaced spokes joining said ring and said hub.

4,499,446

PRESSURE-OPERATED SWITCH FOR A HIGH-VOLTAGE INTERRUPTING MODULE

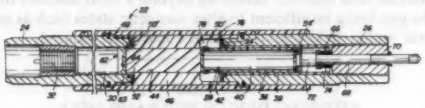
Roy T. Swanson, North Riverside, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Aug. 22, 1983, Ser. No. 525,205
Int. Cl.³ H01H *39/00*
U.S. Cl. 337—30 **19 Claims**

1. An improved switch for a high-voltage device, the switch being of the type in which ignition of a power cartridge generates pressure at one end of an insulative piston to move the piston, which is normally located in a bore formed in a conductive member, away therefrom and into a passageway formed in an insulative liner, such movement of the piston moving a movable contact, through the passageway and away from the

conductive member to break an electrical interconnection between the conductive member and the movable contact, thereby opening the switch; the bore and the passageway being aligned; wherein the improvement comprises:

an insulative lip seal located in the bore between the power cartridge and the one end of the piston, the lip seal being



movable with the piston and being conformally force-fit into the bore, and

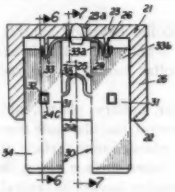
means for limiting movement of the lip seal through the bore so that the lip seal remains in the bore after the switch is open, the force-fit of the lip seal in the bore restricting or preventing the flow of the ignition products of the power cartridge therepast.

4,499,447

BLADE TERMINAL FUSES WITH INTEGRITY INDICATOR

M. Barry Greenberg, N. Miami Beach, Fla., assignor to Guim Multi-Tech Corporation, Miami, Fla.

Filed Jun. 17, 1983, Ser. No. 505,334
Int. Cl.³ H01H *85/32*
U.S. Cl. 337—266 **9 Claims**



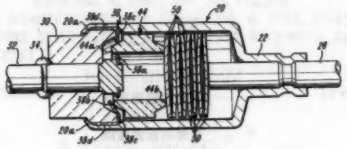
1. A blade terminal fuse having an integrity indicator comprising an insulator housing formed with a top wall, an interior chamber having relatively narrow lateral sections on opposite sides of a central section and an open bottom, a pair of flat terminal blades in coplanar spaced relation having upper portions located in said chamber lateral sections and lower portions projecting downwardly from said open bottom, a fuse-wire extending through said chamber central section conductively connected in series with said terminal blades, said top wall being formed with a central window above said chamber central section and being formed on the interior side thereof on opposite sides of said window with a component of a clamping means, said integrity indicator being an illuminable bead located in said chamber central section in register with said top wall window and having wire leads extending oppositely into said chamber lateral sections conductively contacting said terminal blade upper portions whereby said illuminable bead is in series with said blades and in parallel with said fuse-wire, said terminal blade upper portions each being formed with a companion component of said clamping means, the clamping means securing each of said wire leads in said conductive contact with each terminal blade upper portion.

4,499,448

ELECTRIC CIRCUIT INTERRUPTER

Jack W. Grable, 7010 Malabar Ct., Dayton, Ohio 45459

Filed Feb. 18, 1983, Ser. No. 467,587
Int. Cl.³ H01H *37/52*
U.S. Cl. 337—370 **6 Claims**



3. An electric circuit interrupter device comprising:

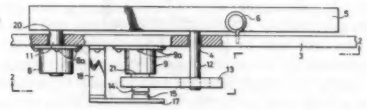
a housing, electric circuit means extending through the housing, the electric circuit means including frangible link means within the housing, plunger means engageable with the frangible link means, thermally responsive disc means changeable in physical shape in response to a temperature change to move the plunger means to break the frangible link means to interrupt the electric circuit means, the housing including a cup-shape housing portion and a relatively flat housing portion, the relatively flat housing portion having a recess therein, a part of the cup-shape housing portion being positioned in the recess of the relatively flat housing portion, fastening means within the recess and retaining the position of the cup-shape housing portion with respect to the relatively flat housing portion, the fastening means being a material which is changeable from a liquid state to a solid state and which is introduced into the recess in a liquid state and which solidifies in the recess to retain the cup-shape housing portion with respect to the relatively flat housing portion.

4,499,449

SPEED SETTING DEVICE FOR A SEWING MACHINE

Nozomu Shinozaki; Takashi Dohi, both of Hirakata; Shinji Yamazaki, Yao, and Shigeo Neki, Osaka, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Japan

Filed Jun. 7, 1982, Ser. No. 386,785
Claims priority, application Japan, Jun. 11, 1981, 56-89882
Int. Cl.³ H01L *43/02*
U.S. Cl. 338—32 R **7 Claims**



1. A device for use in a sewing machine for generating a speed setting signal in resonse to an angular displacement caused by an operator's action, comprising:

a first member pivotally mounted at one end thereof on a first rotary axis of a stationary member and adapted to turn about said rotary axis in response to said angular displacement;

a second member pivotally mounted at one end thereof on a secondary rotary axis of said stationary member spaced from said first rotary axis;

a shaft extending transversely from one of said first and second members to the other member through an opening provided on said other member for rotatably coupling said first and second members at a point adjacent said first rotary axis but remote from said first rotary axis so that said second member rotates through an angle greater than the angle through which the first member rotates;

means for urging said first and second members against each

other for minimizing the amount of loose play which might otherwise exist between said shaft and said opening;

magnetic flux generating means;

magnetic flux sensing means for generating said speed setting signal, one of the flux generating and sensing means being mounted on said second member in coaxial relationship with said secondary rotary axis, the other of said flux generating and sensing means being mounted on said stationary member coaxially with and spaced from said means mounted on said second member; and

means for maintaining the spacing between the flux generating means and the flux sensing means constant in the axial direction of said second rotary means comprising:

(i) spacer means located between said flux generating means and said flux sensing means so that the flux generating means abut against oppositely disposed segments of the spacer means, and

(ii) means for urging said flux generating means and said flux sensing means in a direction toward each other.

4,499,450

SYSTEM TO DETECT SLIPPAGE OF A CLUTCH FOR AN INTERNAL COMBUSTION ENGINE

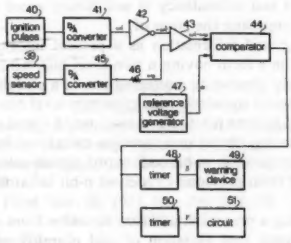
Fujio Makita, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1982, Ser. No. 350,974

Claims priority, application Japan, Feb. 24, 1981, 56-26482

Int. Cl.³ G08B *21/00*; B60Q *1/00*

U.S. Cl. 340—52 R **5 Claims**



1. A system for detecting slippage of a clutch for an internal combustion engine which has a drive member secured to a crankshaft of said internal combustion engine and a driven member adjacent to said drive member, comprising:

first circuit means for producing an output signal in proportion to the number of revolutions of said drive member;

second circuit means for producing an output signal in proportion to the number of revolutions of said driven member;

third circuit means for producing the difference between output signals of said first and second circuit means;

comparator means for comparing said difference with a predetermined reference value and for producing an output signal when said difference is higher than said reference value;

timer means operated in dependency on said output signal of said comparator; and

a warning device connected to said timer means;

said timer means being so arranged as to produce an output signal for operating said warning device when a predetermined time elapses.

4,499,451

MIRROR

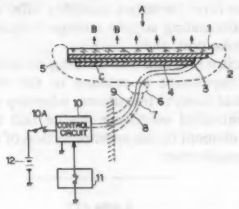
Yasutoshi Suzuki, Oubu; Kunihiko Hara, Aichi, and Ryo Sato, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 2, 1982, Ser. No. 364,633

Claims priority, application Japan, Apr. 7, 1981, 56-52022; Apr. 15, 1981, 56-57472

Int. Cl.³ B60Q *1/00*; G08B *5/00*

U.S. Cl. 340—98 **6 Claims**



6. A mirror arrangement comprising:

a transparent glass member;

a thin film of translucent layer deposited on one whole surface of said glass member in complete contact relation therewith for uniformly reflecting and passing part of light applied thereto; and

light generating means having a light emitting portion that is shaped in a form of information to be conveyed, disposed only behind the translucent layer for uniformly emitting information carrying light therefrom upon application of a voltage thereto, said mirror arrangement functioning as an ordinary mirror when said light generating means is not activated, the light generating means not being visible, and functioning to display said information when said light emitting means is activated by said voltage.

4,499,452

MODULATION INSTALLATION FOR SECTOR SUPPLY OF CHARGE ELEMENTS

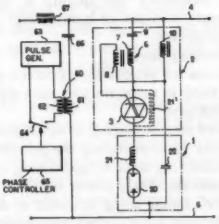
Jean-Pierre Nicolas, Nice, France, assignor to Etablissements Augier, Carros, France

Filed Nov. 2, 1981, Ser. No. 317,489

Claims priority, application France, Nov. 3, 1980, 80 23458

Int. Cl.³ H04B *3/54*

U.S. Cl. 340—310 A **13 Claims**



1. An installation for controlling the electric supply of charge elements which are distributed along supply lines in response to periodical control transitions superposed, at a selected phase angle, upon an alternating supply voltage supplied across said supply lines,

said installation comprising supply circuits through which each of said charge elements is connected between first and second supply lines,

each supply circuit including:

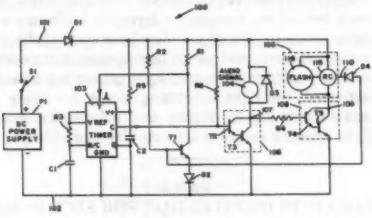
a transition detector means comprising;
a pulse transformer having two windings,
a capacitor connected in series with one of the two windings to form a series assembly,
a choke coil connected in parallel with said series assembly,
means for coupling said series assembly between said supply lines, and
a controlled switching device connected in series with the charge element, via the series assembly, across said supply lines, said controlled switching device having a trigger circuit comprising the other of the two windings,
wherein said capacitor and said one winding connected in series to form the series assembly offer a high impedance, at the alternating supply voltage frequency in relation to said choke coil, and
said capacitor and said one winding connected in series offer a low impedance in relation to the choke coil for the periodical control transitions, whereby the conduction of said controlled switching device and the supply of the charge element occur upon detection of transitions by said pulse transformer.

4,499,453

POWER SAVER CIRCUIT FOR AUDIO/VISUAL SIGNAL UNIT

Robert W. Right, Huntington, Conn., assignor to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 382,881, May 28, 1982, abandoned.
This application Mar. 21, 1984, Ser. No. 591,889
Int. Cl.³ G08B *27/00*
U.S. Cl. 340—326 **14 Claims**



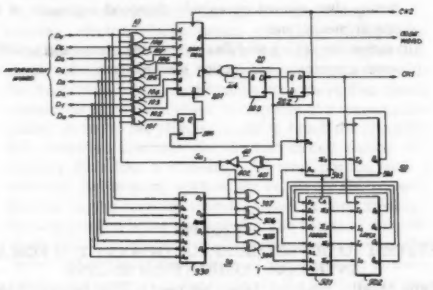
1. A combined audio visual alarm device having audio and visual components activating relatively simultaneous so that at any given time either the audio or visual component will alternately draw power from a power source, so that at a given period of time the audio signal will be either clearly sounding, or not sounding, while providing an audible signal whose tone, i.e. amplitude, frequency and quality is uneffected by said visual components, said device comprising:
(a) an audible device;
(b) a light emitting device;
(c) timing means for producing a control signal of predetermined duration in response to a start signal;
(d) a power supply;
(e) start control means coupled to said timing means and said power supply for controlling the production of said start signal and coupling same to said timing means, in response to the connection of said power supply to said start means;
(f) said control signal being coupled to an audible device activation circuit for coupling said audible device to said power supply for the predetermined duration of said control signal;
(g) a light emitting device actuation circuit coupled to said audible device activation circuit for coupling said light emitting device to said power supply in response to the termination of said control signal; and wherein
(h) said light emitting device produces a pulse subsequent to said light emitting device being coupled to said power supply and which pulse is coupled to said start control means for initiating the generation of another signal whereby said power supply will at any given time only draw the power required by said audible device or said light emitting device, to conserve power.

4,499,454

METHOD AND APPARATUS FOR ENCODING A DIGITAL SIGNAL WITH A LOW DC COMPONENT

Toshiyuki Shimada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 201,781, Oct. 29, 1980, abandoned.
This application Dec. 9, 1983, Ser. No. 559,845
Claims priority, application Japan, Nov. 21, 1979, 54-142252
Int. Cl.³ H03K *13/00*
U.S. Cl. 340—347 DD **51 Claims**



1. A method of passing information encoded in successive binary word signals through a system employing a transferring means for transferring said information, wherein said transferring means is of the type which suppresses a DC component of a transferred signal, said method minimizing both said DC component and redundancy in said binary word signals, said method comprising the steps of:
receiving said information as a present information word signal in a form having n two-level bits, $n \geqq 2$;
selectively generating a selected one of a plurality of binary code word signals formed of m two-level bits in response to said present n-bit information word signal and utilizing a preceding digital sum variation calculated from a plurality of preceding m-bit code word signals selectively generated from previously received n-bit informatoin words, $m > n$;
calculating a present digital sum variation from said preceding digital sum variation of said plurality of preceding m-bit code word signals in combination with said selected one of said m-bit code signals;
said selected one of said m-bit code signals being selectively generated such that said present digital sum variation, calculated as a function of said selected one of said m-bit code word signals is reduced in value; and
transferring said selected one of said m-bit code word signals by means of said transferring means.

4,499,455

ALARM CIRCUIT INTERFACE UNITS

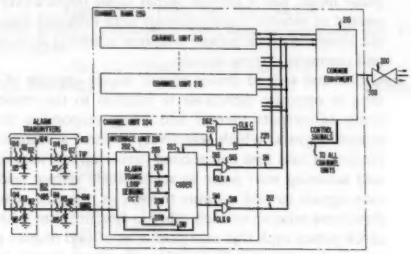
Michael A. Leveille, Newton, and Charles F. Walker, Derry, both of N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 3, 1982, Ser. No. 374,505
Int. Cl.³ G08B *1/00*; H04M *11/04*
U.S. Cl. 340—531 **9 Claims**

5. Apparatus for interfacing a communications loop having changeable signal transmission properties comprising an alarm receiver with one or more digital transmission facilities which transmit multiplexed digital signals in a predetermined format including a predetermined number of digital words and a

framing bit forming a frame, each word representing a corresponding transmission channel and having a predetermined number of bits, a predetermined one of said bits in each word being used as a signaling bit position during one frame out of a predetermined number of frames, said signaling bit position alternating between A and B signaling bit positions, said apparatus being characterized by

means responsive to one or more digital signals from one of



said digital facilities for changing the signal transmission properties of said loop;

means for sensing a signal on said loop responsive to said alarm receiver and the signal transmission properties of said loop and generating a digital output signal therefrom; and

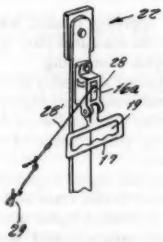
means for inserting said output signal within a predetermined one of said A and B signaling bit positions for a channel within each of said digital facilities.

4,499,456

DRIVER ALERT

Robert Turpin, Sr., c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, c/o Robert Turpin Sr., 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Nov. 20, 1981, Ser. No. 323,660
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—576 **4 Claims**



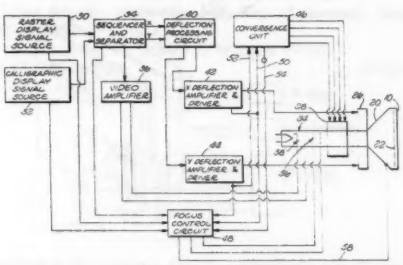
1. A driver alert device for attachment to the interior of an automobile, at a location near a driver thereof, comprising in combination, an elongated bar which at its upper end includes means for mounting on said interior and a pull handle unit adjustably mounted to an intermediate portion of said bar, said device including a warning means for audibly warning said driver when the driver starts to slump over.

4,499,457

SHADOW MASK COLOR SYSTEM WITH CALLIGRAPHIC DISPLAYS

Richard A. Hintze, Sandy, Utah, assignor to Evans & Sutherland Computer Corp., Salt Lake City, Utah

Continuation of Ser. No. 948,734, Oct. 5, 1978, abandoned. This application May 14, 1982, Ser. No. 378,149
Int. Cl.³ G09G *1/28*
U.S. Cl. 340—703 **5 Claims**



1. A color display system for providing a dynamic color presentation, comprising:

a cathode ray display device incorporating deflection means and a shadow mask in combination with a color screen;

means for providing raster scan color display signals for modulating said display device to produce a display;

means for providing calligraphic display signals for modulating said display device to produce a display;

driver means for said deflection means to provide beam deflection in said cathode ray display device to accommodate both said raster scan display signals and said calligraphic display signals;

sequencing means to sequence both the operation of said driver means and the alternative application of said raster scan signals and said calligraphic display signals to control said cathode ray display device for producing a dynamic color presentation manifesting both said raster scan color display signals and said calligraphic display signals; and

focus control means to vary the focus of said cathode ray display device with the sequencing of a raster scan signal and a calligraphic display signal.

4,499,458

LIQUID CRYSTAL DISPLAY DEVICE ASSOCIATING TWO ADDRESSING MODES

Serge Le Berre, and Michel Hareng, both of Paris, France, assignors to Thomson-CSF, Paris, France

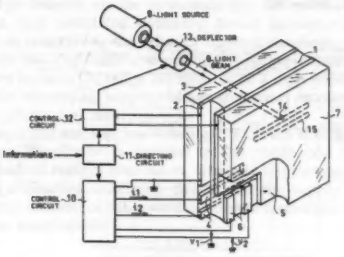
Filed Jun. 9, 1982, Ser. No. 386,522
Claims priority, application France, Jun. 10, 1981, 81 11394
Int. Cl.³ G09G *3/36*
U.S. Cl. 340—713 **3 Claims**

1. A liquid crystal display device comprising:

a cell including two plates, at least one of which is transparent, a continuous layer of smectic liquid crystal enclosed between said two plates, and two electrodes supported on the respective internal faces of said plates;

first and second means for modifying the optical properties of said layer wherein each of said means are supplied by electrical signals representative of data to be displayed and wherein said first and second means produce a heating and cooling cycle on a first and second display portion with said first display portion being defined by the area where each of said two electrodes is continuous and with said second display portion being defined by the area formed by the crossing of a pair of crossed sets of striped portions of each electrode with each set of striped portions being associated with a respective one of said electrodes and wherein said pair of crossed sets of striped

portions defines an addressing matrix whose heating is caused by a current crossing one of said sets of stripes, wherein said first means for modifying comprises an optical beam scanning means for scanning said first display portion and said second means for modifying comprises a current generating means to heat said second display portion; and



control means including a switching means which feeds said electrical signals to one of a first circuit means for controlling an optical deflector in order to control said beam scanning means, and a second circuit means for controlling said addressing matrix depending upon an addressing mode fed to said control means.

4,499,459

DRIVE CIRCUIT FOR DISPLAY PANEL HAVING DISPLAY ELEMENTS DISPOSED IN MATRIX FORM

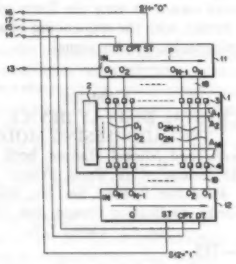
Minoru Sasaki, Tokyo, and Toshiharu Kamiya, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 29, 1982, Ser. No. 428,302

Claims priority, application Japan, Oct. 29, 1981, 56-173259; Oct. 29, 1981, 56-173260

Int. Cl.³ G09G *3/29*

U.S. Cl. 340—752 **5 Claims**



1. A display device comprising:

a display panel having address lines and data lines, and display elements connected to said address lines and data lines in a matrix form, said address lines being connected to successively receive scanning pulses, and said data lines being connected to successively receive picture data signals and divided into odd-numbered data lines and even-numbered data lines each having upper and lower ends; and

first and second driver circuit means respectively arranged on upper and lower sides of said display panel along the direction of said data lines for successively applying the picture data signals to said data lines of said display panel during a scanning period, said first and second driver circuit means having an identical integrated-circuit configuration and each having outputs arranged in an order, said outputs of said first driver circuit being coupled to said upper ends of said odd-numbered data lines, respectively, and said outputs of said second driver circuit being coupled to said lower ends of said even-numbered data lines, respectively, in an opposite order to that of connection of said outputs of said first driver circuit means to said odd-numbered data lines,

said first and second driver circuit means each having a control signal input, a clock pulse input, a scanning start pulse input, and a picture signal input respectively connected to receive control signals with different logic levels, common clock pulses, common scanning start pulses, and common picture signals,

said first and second driver circuit means capable of scanning in opposite directions in relation to the respective order of outputs thereof and being responsive to said control signals, which selectively control a scanning direction of said first and second driver circuit means, and said scanning start pulse to successively output said picture signals to said outputs thereof in opposite scanning directions relative to each other in synchronism with said clock pulses such that said data lines of said display panel are successively supplied with said picture signals in one direction of said display panel during the scanning period.

4,499,460

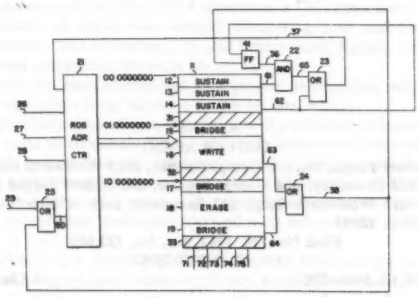
ROS CONTROL OF GAS PANEL

Kenneth A. Pearson, Kingston, and Larry R. Zucker, Saugerties, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1982, Ser. No. 386,493

Int. Cl.³ G09G *3/28*

U.S. Cl. 340—771 **4 Claims**



1. A system for applying sustain, write and erase signal sequences to control the discharge state of a plurality of cells in a plasma display device comprising:

a storage device having a plurality of sections in which said sustain, write and erase signal sequences are stored;

means for generating erase and write command signals;

means for detecting the presence of said erase and write command signals;

means for reading said signal sequences from said storage device in response to said erase and write command signals, said erase command signal initiating the reading of said erase signal sequence, said write command signal initiating the reading of said write signal sequence, and the absence of said erase and write command signals initiating the reading of said sustain signal sequence; and

means for applying said signal sequences to said plasma display device,

whereby the discharge state of said plasma display device can be periodically changed in response to write and erase command signals.

4,499,461

CIRCUIT ARRANGEMENT FOR CENTRALLY-CONTROLLED TELECOMMUNICATION EXCHANGE SYSTEMS, PARTICULARLY FOR TIME-DIVISION MULTIPLEX TELEPHONE EXCHANGE SYSTEMS, WITH INFORMATION EXCHANGE BETWEEN PBX DEVICES

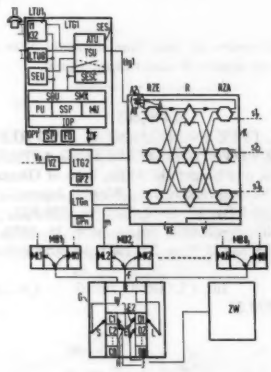
Alfred Schneider, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 1, 1982, Ser. No. 394,136

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128365

Int. Cl.³ H04Q 9/00; H04J 3/16

U.S. Cl. 340—825.03 1 Claim



1. In a circuit arrangement for a telecommunication exchange system of the type in which a central control unit transmits information to and receives information from sub-central devices over individually assigned lines or time division multiplex channels, in which the central control unit is provided with an input/output device for receiving information called in by the central control unit for processing, and in which an input/output memory is provided for the information exchange between the sub-central devices and between the control unit and the sub-central devices, the improvement wherein:

the information memory comprises an input/output control, an output part divided into output sub-memories and an input part likewise divided into input sub-memories, for information to be fetched by the central control unit and operable to intermediately store information worked up by the central control unit to be distributed to the sub-central devices and information to be output by a first sub-central device to a second sub-central device together with a respective address identify the second sub-central device via the input/output control,

means providing that the information to be emitted from the first sub-central device and destined for the second sub-central device unchanged and serving for signaling of call-associated switch identifiers which have arrived in the first sub-central device and are to be transmitted via the second sub-central device are transmitted by the first sub-central device to said input/output control with an auxiliary criterion in addition to the destination address, the auxiliary criterion causing the input/output control to input the information into the output sub-memory assigned to the destination sub-central device.

4,499,462

CIRCUIT ARRANGEMENT FOR THE ELECTRONIC CODE LOCKING OF LOCKS

Klaus Stoesser, Langenhain-Hofheim, and Heinz Vinson, Langen, both of Fed. Rep. of Germany, assignors to Battelle Institut e.V., Postfach, Fed. Rep. of Germany

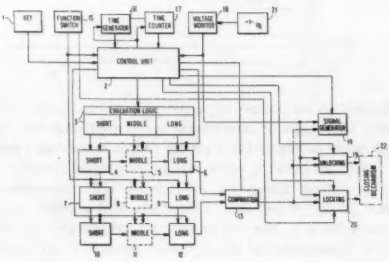
PCT No. PCT/EP81/00143, § 371 Date Apr. 21, 1982, § 102(e) Date Apr. 21, 1982, PCT Pub. No. WO82/00847, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 2, 1981, Ser. No. 373,488

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033232

Int. Cl.³ H04Q 9/00; E05B 49/00

U.S. Cl. 340—825.31 17 Claims



1. A lock, comprising:

a supply voltage;

a manually operable key which includes an electrical switch adapted to be manually operated selectively to open or close an electrical circuit; each operation of said switch producing an input signal;

a means for storing a reference code;

a locking signal generator adapted to be triggered to generate a locking signal;

an unlocking signal generator adapted to be triggered to generate an unlocking signal;

an electronic means for classifying temporal intervals between successive ones of said input signals produced by actuations of said key into a plurality of groupings;

a comparator; said comparator being adapted to generate a signal to selectively trigger an unlocking signal or a locking signal;

said electronic means for classifying supplying said classified input signals to said comparator;

said comparator being adapted to compare said stored reference code to said classified input signals;

said comparator triggering said unlocking signal when said stored reference code is identical to said classified input signals;

a latch adapted to be selectively moved to an open condition or a closed condition;

a means for operating said latch selectively to an open condition or a closed position;

said means for operating being actuated selectively by said unlocking signal or said locking signal in an opening operation or a closing operation, respectively;

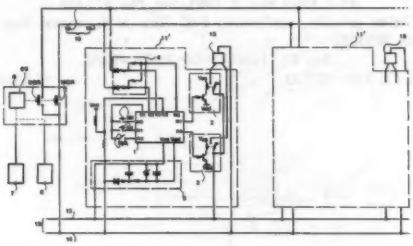
whereby when entry of input signals by operation of said key matches said stored reference code, said latch is triggered by an unlocking signal from said comparator to be operated to an open condition by said means for operating.

4,499,463

APPARATUS FOR CONTROLLING ELECTRICAL RECEIVERS OCCUPYING AT LEAST TWO STATES

Dominique Jacquel, Marnaz, France, assignor to Somfy, France

Filed Jul. 8, 1982, Ser. No. 396,337
Claims priority, application France, Jul. 28, 1981, 81 14623
Int. Cl.[3] H04Q 9/00
U.S. Cl. 340—825.52 6 Claims



1. Apparatus for controlling a plurality of electrical devices each able to occupy at least two states, comprising individual control means connected to a power supply associated respectively with said devices, each individual control means comprising switching means for positioning the corresponding electrical device in any one of its states, and general control means connected to the power supply, comprising switching means for positioning all the electrical devices in any one of their states,

characterised in that each individual control means comprises a logic processing unit permanently connected to the power supply and comprising first and second groups of input terminals, the first group of input terminals including at least one input terminal to which is connected the switching means of said individual control means, said logic processing unit also comprising output terminals connected to the corresponding electrical device, the switching means of the general control device being connected to said second group of input terminals provided on each logic processing unit each logic processing unit accepting commands given non-simultaneously by the corresponding individual control means or by the general control means and accepting only the command given by the general control means when such command is given simultaneously with a command from the corresponding individual control means.

4,499,464

APPARATUS FOR REMOTE AUTHORIZATION FOR DISPENSING FLUIDS

Bruce R. Knox, Wickliffe, and Andrew J. Hruby, Northfield, both of Ohio, assignors to Ardac, Inc., Eastlake, Ohio

Continuation of Ser. No. 077,715, Sep. 21, 1979, abandoned. This application Feb. 19, 1982, Ser. No. 350,399
Int. Cl.[3] G08C 19/00; H04Q 7/00
U.S. Cl. 340—825.72 11 Claims

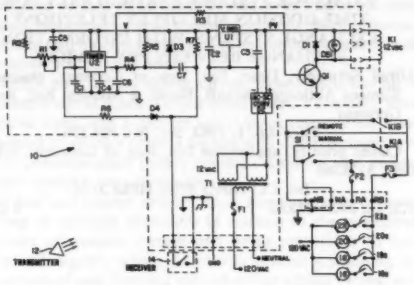
1. Apparatus for remotely authorizing the dispensing of fluids, comprising:

operator-actuatable transmitting means for producing an output signal;

receiver means in operative communication with said transmitting means for receiving said output signal;

a plurality of motor-driven pumps having electric resets for dispensing the fluids; and

circuit means comprising a timing circuit interconnecting said receiver means and said electric resets, said timing circuit producing a signal of fixed time duration for enabling said resets for said time duration after receipt by said receiver means of said output signal.

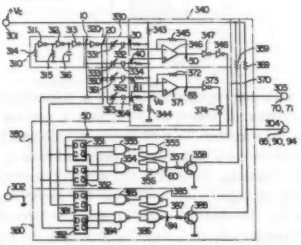


4,499,465

CAPACITIVE-TYPE INCREMENTAL AND REFERENCE ANGULAR ROTATION DETECTING APPARATUS

Hiroaki Tanaka, and Shigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 17, 1982, Ser. No. 358,903
Claims priority, application Japan, Mar. 18, 1981, 56-40051; May 25, 1981, 56-78872; May 27, 1981, 56-80585; Jun. 5, 1981, 56-86507
Int. Cl.[3] G08C 19/10
U.S. Cl. 340—870.37 4 Claims



1. A capacitive-type incremental rotational position and reference angular position detecting apparatus, comprising:

a stationary part;

a rotational part;

a first plate, mounted on said stationary part, having first and second first-input electrodes, each including a plurality of electrode pieces, said electrode pieces being arranged around a circumference of said first plate at respective equal intervals and contiguously intermeshed, and said first plate having third and fourth semi-circular second-input electrodes arranged around said circumference;

a second plate, mounted on said rotational part and facing said first plate, having first-output electrode means including a plurality of electrode pieces arranged along a circumference of said second plate at equal intervals facing said electrode pieces of said first-input electrodes of said first plate, and said second plate having second-output electrode means facing said second-input electrodes of said first plate;

a periodic signal supply circuit for supplying two periodic signals of predetermined period and opposite phase respectively to said first-input electrodes and to said second-input electrodes;

signal transmission means for transmitting signals between said first plate and said second plate;

an incremental rotational position signal generating circuit means for detecting incremental rotation of said second plate by detecting the phase relation between periodic signals output by said first-output electrode means and the periodic signals supplied by said periodic signal supply circuit; and

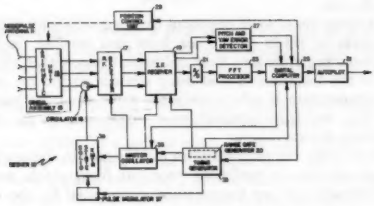
a reference angular position signal generating circuit means for detecting reference angular position of said second plate by detecting the phase relation between periodic signals output by said second-output electrode means and the periodic signals supplied by said periodic signal supply circuit.

4,499,466

METHOD OF PRODUCING VELOCITY-AIDED RANGE GATES

Arthur J. Torino, Jr., Merrimack, N.H.; George A. Bouchard, Arlington, and Philip A. Keane, North Reading, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 1, 1982, Ser. No. 394,243
Int. Cl.³ G01S *13/70*
U.S. Cl. 343—7.3 **1 Claim**



1. In the operation of a guidance system for a guided missile in flight, such missile carrying the combination of a pulse Doppler radar and a digital computer to derive digital signals representative of the position of a selected target relative to such missile during an intercept and representative of the then existing Doppler velocity between such missile and target, the method of generating a range gate compensated for Doppler velocity, such method comprising the steps of:

(a) firstly, periodically recording the then existing digital signals out of the digital computer to provide corresponding digital signals extant in each interval between recording, each such interval being greater than the pulse repetition interval of the pulse Doppler radar;

(b) secondly, transferring the extant digital signals indicative of the position of the selected target to a random access memory and the extant digital signals indicative of the Doppler velocity to a counter;

(c) addressing the random access memory and actuating the counter at different rates to produce a velocity-aided range gate control signal, the time of occurrence of such control signal after each transmitted pulse being varied in accordance with extant digital signals indicative of Doppler velocity; and

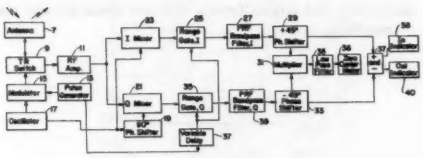
(d) synchronizing the velocity-aided range gate control signal with each pulse transmitted by the pulse Doppler radar.

4,499,467

DOPPLER RADAR SETS WITH TARGET DIRECTION SENSING CAPABILITY

Otto Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 14, 1982, Ser. No. 368,482
Int. Cl.³ G01S *13/62*
U.S. Cl. 343—9 R **7 Claims**



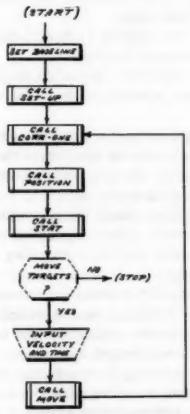
1. A Doppler radar set comprising a pulse generator providing a pulse repetition frequency for operation of said radar at a frequency which is a high multiple of the highest expected Doppler shift frequency, means for receiving a video pulse signal at said pulse repetition frequency modulated by the Doppler frequency including a pair of quadrature receiving channels each including a mixer, the input to one mixer being phase shifted by 90° with respect to the other, a pulse repetition frequency bandpass filter coupled to each mixer in each channel, a Doppler phase shifter connected to each bandpass filter of each said channel, said Doppler phase shifters being adapted to shift the relative phases of the signals of said channels by 90°, and circuitry connected to the outputs of said Doppler phase shifters to determine and indicate the direction of moving target motion along the beam of said radar, and wherein said Doppler phase shifters are operated at said frequency higher than the frequency of the highest Doppler frequency of said radar set.

4,499,468

RANGE-ONLY MULTISTATIC RADAR SYSTEM

Donald M. Montana, New Hartford, and Randy S. Herd, Rome, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 21, 1982, Ser. No. 370,234
Int. Cl.³ G01S *13/46*
U.S. Cl. 343—15 **7 Claims**



1. A process of determining real targets from bistatic range

measurements in a range-only multistatic radar system having N^2 radar stations, $N \geq 2$, located in a grid pattern, said radar system having a plurality of transmitters and receivers, comprising the steps of:

applying a range difference similarity test to bistatic range differences to determine similar range difference elements;

applying a uniqueness test to said similar range difference elements;

computing positions of targets having unique range differences as determined by said uniqueness test; and

identifying real targets from a real time track file and track smoothing.

4,499,469

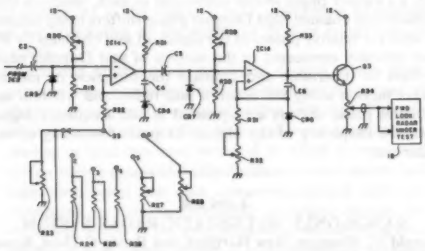
RADAR TESTER

John W. Kesterson, 6201 Turtle Dove Dr., Austin, Tex. 78744

Filed Sep. 23, 1982, Ser. No. 422,517

Int. Cl.³ G01S *7/40, 9/02*

U.S. Cl. 343—17.7 **12 Claims**



1. Video signal generating apparatus for simulated target rapid testing of video circuits in a terrain following, forward-looking, airborne radar system having an elevation scan demodulated signal indicating the position of the radar antenna, and a trigger signal indicating the firing of the transmitter, said apparatus comprising:

means for an operator to input a desired range of simulated target antenna positions:

first logic means for comparing the operator's selected range of antenna positions with said elevation scan demodulated signal;

second logic means for generating a simulated target initiating signal when the position of the radar antenna is within the range of operator selected antenna positions and said trigger signal is present;

first converting means for converting said target initiating signal into a pulsed signal having operator controlled pulse length, thereby controlling the range to said simulated target;

second converting means for converting said pulsed signal into a video signal second pulsed signal having operator controlled pulse width, thereby controlling the width of said simulated target; and

means for coupling said video second pulsed signal to the video signal circuitry of said terrain-following, forward-looking, airborne radar system for rapidly evaluating the performance of the radar video system under controllable, stable conditions.

4,499,470

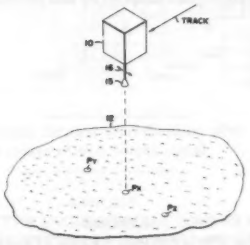
METHOD OF MEASURING SEA SURFACE WATER TEMPERATURE WITH A SATELLITE INCLUDING WIDEBAND PASSIVE SYNTHETIC-APERTURE MULTICHANNEL RECEIVER

Joseph M. Stacey, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 6, 1982, Ser. No. 375,620

Int. Cl.³ H04B *7/185;* **G01W** *1/08*

U.S. Cl. 343—352 **3 Claims**



3. A method for measuring the temperature of water at the sea surface, over a large area of the sea, by a satellite which has a microwave antenna that can detect microwave emissions from the sea surface, comprising:

establishing a plurality of widely spaced buoy devices in said area of the sea, wherein each buoy device transmits signals representing the precise temperature of the at the buoy device;

detecting microwave emissions from a multiplicity of limited areas or pixels of the sea from said satellite, including detecting emissions from calibration pixels that are close to the locations of said buoy devices so the sea surface temperature is substantially the same as at the buoy device, and from noncalibration pixels that are far from a buoy device;

determining the ratio between a difference in the amplitude of microwave emissions received from pixels and the difference in sea temperature represented by the difference in microwave emissions, by measuring the change in emissions from at least two of said buoy devices whose difference in sea temperatures is precisely known; and

determining the sea temperature at each of a plurality of noncalibration pixels according to the magnitude of microwave emissions detected from the pixel, based on the temperature at at least one buoy device and the determined relationship between a difference in amplitude and the difference in temperature.

4,499,471

RECONFIGURABLE DUAL MODE NETWORK

Howard H. Luh, Sunnyvale, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed May 2, 1983, Ser. No. 490,928

Int. Cl.³ H01Q *3/22, 3/24, 3/26;* **H01P** *5/16*

U.S. Cl. 343—373 **10 Claims**

1. A reconfigurable dual mode network having first and second input ports, and first, second, and third output ports, wherein the maximum amplitudes (a, b, and c, respectively) of the voltages appearing at the three output ports are the same regardless of which input port is excited;

wherein a, b, and c are preselected, are reconfigurable, and are arbitrary subject only to the constraint that the sum of the squares of any two members of the set consisting of a, b, and c must be greater than or equal to the square of the third member of said set;

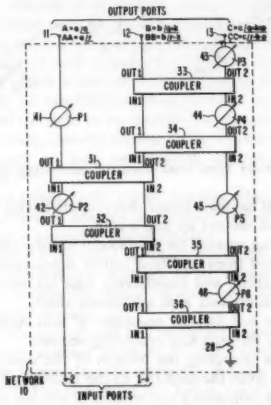
said network further comprising a first coupler having a first

output coupled via a first phase shifter to the first output port;

a second coupler having a first output coupled via a second phase shifter to a first input of the first coupler, a second output coupled to a second input of the first coupler, and a first input coupled to the second input port;

a third coupler having a first output coupled to the second output port, and a second output coupled via a third phase shifter to the third output port;

a fourth coupler having a first output coupled to a first input of the third coupler, a second output coupled via a fourth phase shifter to a second input of the third coupler, and a first input coupled to a second output of the first coupler;



a fifth coupler having a first output coupled to a second input of the second coupler, and a second output coupled via a fifth phase shifter to a second input of the fourth coupler; and

a sixth coupler having a first output coupled to a first input of the fifth coupler, a second output coupled via a sixth phase shifter to a second input of the fifth coupler, and a first input coupled to the first input port.

5. The apparatus of claim 1 further comprising a feed element coupled to each of the output ports, wherein the feed elements are directed at an antenna.

4,499,472

SEQUENTIALLY STEERED RECEIVER WITH TIMED RECYCLE CALIBRATION

Richard L. Willett, 10716 Citrus Dr., Moorpark, Calif. 93021

Filed Nov. 14, 1983, Ser. No. 550,832
Int. Cl.³ H01Q *3/02, 3/12*
U.S. Cl. 343—374 **6 Claims**

1. A system for sequentially steering and calibrating an omnidirectional receiver providing an indication of the phase relation of received signals comprising:

(a) antenna means having directional arrays for receiving input signals in selected directions,

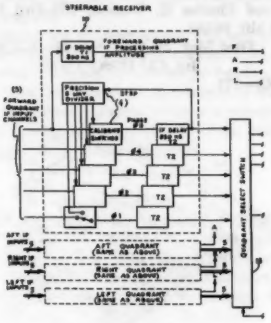
(b) quadrant processing means connected to receive the input signals from said antenna means,

(c) said quandrant processing means including delay means for storing and providing said input signals at the output of said delay means after a predetermined time delay,

(d) amplitude comparison means for comparing the input signals received by said antenna means during a first delay period,

(e) switch means connected to said amplitude comparison means for connecting the quadrant processing means associated with the respective directional array developing the greatest amplitude input signal, to a phase comparator,

(f) said delay means providing said input signals at its output, subsequent to said first delay period, and to said phase comparator,



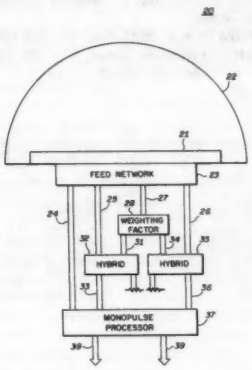
(g) said phase comparator providing an indication of the phase relation of said input signals.

4,499,473

CROSS POLARIZATION COMPENSATION TECHNIQUE FOR A MONOPULSE DOME ANTENNA

Basrur R. Rao, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,357
Int. Cl.³ H01Q *19/06, 23/00*
U.S. Cl. 343—754 **4 Claims**



1. In an antenna of the type including a non-planar lens positioned in the field of a planar scannable antenna for modifying the scanning properties thereof, the planar scannable antenna having a plurality of elements, a planar array aperture, a planar array aperture distribution function, and at least one monopulse difference signal output port, the improvement comprising:

a receiving array, having a receiving array aperture and an output port, positioned in cross polarized relationship with said planar scannable antenna; and

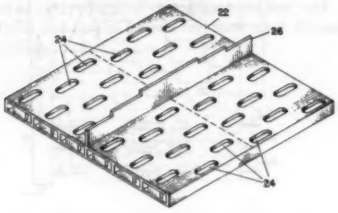
means coupled to said receiving array output port and to at least one of said difference signal output ports for combining signals at said difference signal output ports with signals at said receiving array output port in a predetermined manner to reduce null filling in said difference signal output ports due to polarization distortion caused by said non-planar lens.

4,499,474

SLOT ANTENNA WITH FACE MOUNTED BAFFLE

Harvey P. Muhs, Jr., 10331 Shirley Ave., Northridge, Calif. 91326, and Charles K. Watson, 653-33rd St., Manhatten Beach, Calif. 90266

Filed Mar. 29, 1982, Ser. No. 363,264
Int. Cl.[3] H01Q 13/10
U.S. Cl. 343—771 4 Claims



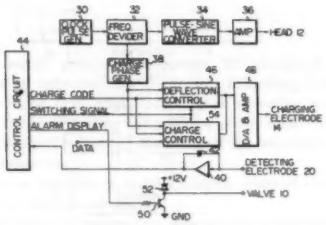
1. A waveguide slot antenna consisting of four quadrants A, B, C and D which create two functional halves (A+B) and (C+D) comprising a flat plate, said plate containing a plurality of radiating slots, said slots having longitudinal and transverse axes and arranged in a lattice, a baffle interposed between the two functional halves of the plate (A+B) and (C+D) in a plane (perpendicular) parallel to the (E-field) longitudinal axes of the (plate) slots.

4,499,475

INK JET PRINTING APPARATUS

Koichiro Jinnai, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 9, 1981, Ser. No. 319,520
Claims priority, application Japan, Nov. 25, 1980, 55-165575
Int. Cl.[3] G01D 15/18
U.S. Cl. 346—75 7 Claims



1. An ink jet printing apparatus comprising:

ink ejection means for ejecting and charging a jet of ink droplets;

deflection means for electrostatically deflecting the jet by a variable amount;

deflection detector means for detecting deflection of the jet to predetermined reference deflection and a direction of deviation of the jet from the reference deflection; and

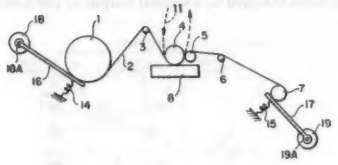
control means responsive to the detector means for controlling the deflection means to vary deflection of the jet toward the reference deflection in accordance with a sensed direction of deviation by progressively smaller amounts and terminating variation of the deflection when an amount of deflection variation has been reduced to a predetermined value, the control means comprising alarm means for producing an alarm signal when variation of the deflection has been terminated and the detector means does not detect the jet at the reference deflection.

4,499,476

TRANSFER TYPE HEAT SENSITIVE RECORDING APPARATUS

Toshiharu Inui; Masami Kurata; Hisao Nakajima, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Inc., Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,355
Claims priority, application Japan, Apr. 30, 1981, 56-65486
Int. Cl.[3] G01D 15/10, 15/24; B65H 25/28, 59/00
U.S. Cl. 346—76 PH 6 Claims



1. A transfer type heat sensitive recording apparatus comprising:

a feed roll having a donor sheet supplied with a heat transfer type ink wound up into a roll;

a recording section for selectively heating said donor sheet delivered from said feed roll in dependence upon image information, and transferring said ink onto a recording paper in contact with said donor sheet;

a take-up roll for the recovery of said used donor sheet passing through said recording section;

means for detecting the tension of the donor sheet transported from the feed roll to the take-up roll;

means for correcting the tension of the ink donor sheet in accordance with the result of the detection, said tension detecting means comprising variable resistors having rotary shafts, said shafts being fixedly coupled to first ends of actuator levers, second ends of said actuator levers being in contact with said feed roll and said take-up roll, respectively, movement of said second ends of said actuator levers in response to changes in diameters of said feed roll and said take-up roll, respectively, rotating said respective rotary shafts; and

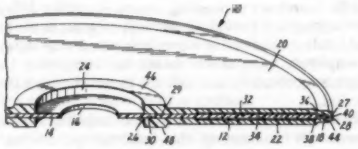
springs for urging said second ends of said levers in contact with said feed roll and said take-up roll, a variable resistor being provided for each of said feed roll and said take-up roll, whereby an increase or decrease in the amount of donor sheet on said rolls changes a diameter of said rolls and thereby varies the resistance of said resistors.

4,499,477

COVER ASSEMBLY FOR OPTICAL RECORDING MEDIUM

David H. Davies, Cupertino, and Daniel E. Evanicky, Morgan Hill, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 14, 1983, Ser. No. 474,877
Int. Cl.[3] G01D 15/34, 15/14; B29C 19/00
U.S. Cl. 346—137 13 Claims



1. A cover assembly adapted for use with an optical recording medium having a disk-shaped substrate including a central

aperture and outer periphery and having an optically recordable coating on at least one major surface thereof extending at least between the central aperture and outer periphery, wherein said cover assembly comprises two substantially identical disk-like halves each of which is a single, integrally molded construction having a central aperture and outer periphery,

(a) the inner surface of each half including

(i) a first substantially planar annulus adjacent to the central aperture thereof adapted to be bonded to a like planar annulus on said substrate,

(ii) a second substantially planar annulus extending radially outward from said first annulus and off-set relative thereto, adapted to be slightly spaced from a said substrate surface over an annular region on which a said optically recordable coating extends, said cover half in the region of said second annulus being formed of a material which is substantially transparent and has substantially no birefringent characteristics at the wavelength of the light to be used for subsequent recording and playback, thereby allowing a light beam having said wavelength to pass substantially unimpeded therethrough,

(iii) a third substantially planar annulus adjacent to said outer periphery adapted to partially support said substrate upon assembly therewith, and

(iv) a portion on the outer periphery adapted to be bonded to a corresponding member of an opposing half to thereby enclose the space between said substrate and said second annulus, and

(b) the outer surface of each half including a raised, substantially planar annulus adjacent to the central aperture thereof for supporting the assembly, thereby minimizing contact with the portion of the halves overlying the recordable coating to prevent scratches and the like which would otherwise interfere with subsequent optical recording and playback.

4,499,478

INK JET RECORDING APPARATUS

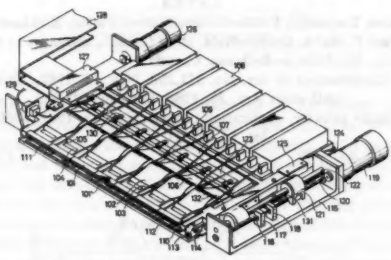
Yohji Matsufuji; Shigeo Togano, and Hiroo Ichihashi, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,909

Claims priority, application Japan, Jan. 16, 1981, 56-5517; Jan. 16, 1981, 56-5518; Jan. 16, 1981, 56-5519; Jan. 16, 1981, 56-5520

Int. Cl.³ G01D *15/16, 15/18*

U.S. Cl. 346—140 R **13 Claims**



1. Ink jet recording apparatus comprising:

a head unit of the cassette type comprising a plurality of ink jet head sections of which each comprises a multi-array orifice ink jet head for effecting recording at a predetermined position and a drive control element for driving the associated ink jet head to project a liquid droplet on demand from at least one orifice thereof;

common multiplex wiring means for supplying electric signals to each of said drive control elements;

a reservoir for storing liquid to be fed to said head unit of the cassette type; and

a common supporting member supporting said head unit of the cassette type, said common multiplex wiring means and said reservoir, each of said ink jet heads and each of said drive control element being removably fixed on said common supporting member in such a manner as to be removable therefrom independently of the other said ink jet heads and drive control elements.

4,499,479

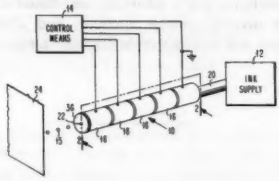
GRAY SCALE PRINTING WITH INK JET DROP-ON DEMAND PRINTING HEAD

Francis Chee-Shuen Lee, San Jose; Ross N. Mills, and Frank E. Talke, both of Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1982, Ser. No. 413,039

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **7 Claims**



1. A drop-on-demand ink jet printing system for gray scale printing comprising a print head having an ink cavity filled with ink from an ink source which is not pressurized and means for selectively energizing a transducer to eject a single drop of ink from said ink cavity each time the transducer is energized, the improvement comprising:

means to eject a drop of ink having a selectively variable size, said means comprising a continuous electromechanical transducer having a plurality of separately actuable sections;

print data specifying the drop size of each of the ink drops required to produce the print image defined by said print data;

logic circuit control means operable in response to said print data to generate voltage control pulses for each ink drop required, means for coupling said voltage control pulses to drive a predetermined combination of sections of said transducer for actuation to produce an ink drop having the specified drop size and a predetermined drop velocity, said voltage control pulses for producing subsequent ones of said ink drops being operable to produce ink drops of the specified drop size and drop velocities equal to said predetermined drop velocity within predetermined limits.

4,499,480

LIQUID JET RECORDING DEVICE

Yasushi Takatori, Sagamihara; Yasuhiro Yano, Kawasaki, and Yoshifumi Hattori, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,424

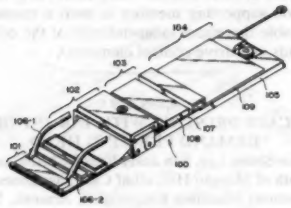
Claims priority, application Japan, Oct. 13, 1981, 56-163645; Nov. 13, 1981, 56-163646

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **9 Claims**

1. A liquid jet recording device which comprises a liquid discharging portion including means defining a number of discharging orifices for formation of flying liquid droplets by discharging a liquid, a respective liquid channel communicating with each of said discharging orifices, and electrothermal

transducers wh i are arranged each for a corresponding one of said dischar orifices along a respective one of said liquid channels; respective driving control portions for driving respective ones of said electrothermal transducers of said liquid discharging portion; a connecting wiring portion for electrical connection of respective ones of said electrothermal transducers to the corresponding ones of said driving control portions; a matrix wiring portion for sending signals to said driving control portions; and a substrate; said liquid discharging portion, said driving control portions, said connecting wiring portion and said matrix wiring portion being mounted on said substrate.

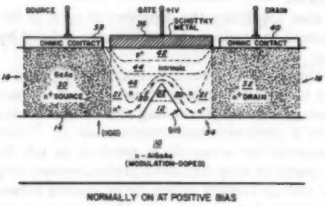


4,499,481

HETEROJUNCTION SCHOTTKY GATE MESFET WITH LOWER CHANNEL RIDGE BARRIER

Richard F. Greene, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 14, 1983, Ser. No. 532,122
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22 **11 Claims**



NORMALLY ON AT POSITIVE BIAS

1. A semiconductor switching device including in combination:

a doped semiconductor substrate of the first conductivity type and of a first material with one surface thereof being approximately flat but with a ridge structure rising from a portion of said flat surface;

a semiconductor layer of a second material disposed over the flat surface and ridge structure of said substrate to form an epitaxial heterojunction interface therewith, heavily doped source and drain regions of the first conductivity type being formed down into said semiconductor layer on opposite sides of said ridge structure;

source and drain ohmic contacts being disposed on said semiconductor layer above said source and drain regions;

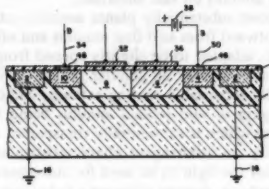
a gate material being disposed on said semiconductor layer above said substrate ridge structure to form a barrier with said semiconductor layer.

4,499,482

WEAK-SOURCE FOR CRYOGENIC SEMICONDUCTOR DEVICE

Michael A. Levine, 383 Sycamore Pl., Sierra Madre, Calif. 91024

Continuation-in-part of Ser. No. 333,465, Dec. 22, 1981, Pat. No. 4,433,433, and Ser. No. 357,866, Mar. 15, 1982,. This application Jun. 25, 1982, Ser. No. 392,081
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **10 Claims**



1. A cryogenic semiconductor device comprising:

a substrate of a first conductivity type;

a source region;

a drain region spaced apart from said source region, said source region and said drain region each being of a second conductivity type;

a weak-source region contiguous to said source region and also of said second conductivity type but having a lower concentration of carriers than in said source region;

a channel region between said weak-source region and said drain region;

a dielectric layer extending above said weak-source region and said channel region;

at least one control gate electrode above said channel region and separated therefrom by said dielectric layer for selectively inducing within said channel region an induced channel of said second conductivity type extending from said weak-source region to said drain region;

at least one weak-source gate electrode above said weak-source region and separated therefrom by said dielectric layer; and

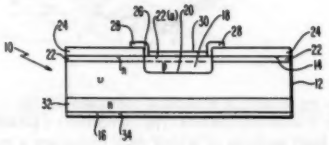
means for applying a predetermined voltage potential between said source region and said weak-source gate electrode to create a potential bucket connecting said source region with said induced channel.

4,499,483

SILICON PHOTODIODE WITH N-TYPE CONTROL LAYER

Tsuneo Yamazaki, Pointe Claire; Mervat Faltas, Kirkland, and Paul P. Webb, Beaconsfield, all of Canada, assignors to RCA, Inc., Ste-Anne-de-Bellevue, Canada

Continuation of Ser. No. 321,280, Nov. 13, 1981,. This application Apr. 26, 1984, Ser. No. 603,983
Claims priority, application Canada, Sep. 16, 1981, 386011
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **6 Claims**



1. A photodiode comprising:

a silicon body having ν-type conductivity with a resistivity

greater than 1,000 ohm-cm and first and second major surfaces;

a continuous p-type conductivity region extending a distance into the body from a portion of the first surface through which light enters the body and having a dimension along said first surface greater than the distance said p-type region extends into the body;

an n-type conductivity control layer extending a distance into the silicon body from a portion of said first surface contiguous with and around that portion of said first surface from which said p-type region extends;

an n-type conductivity region extending a distance into the body from said second surface;

a first electrical contact overlying a portion of said p-type region at said first surface; and

a second electrical contact overlying at least a portion of said n-type region at said second surface.

4,499,484

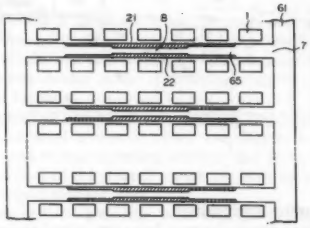
INTEGRATED CIRCUIT MANUFACTURED BY MASTER SLICE METHOD

Tetsu Tanizawa; Hitoshi Omichi, both of Kawasaki, and Yoshiharu Mitono, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 8, 1982, Ser. No. 415,795

Int. Cl.³ H01L *21/70, 21/90, 29/44*

U.S. Cl. 357—68 **6 Claims**



1. An integrated circuit, manufactured by the master slice method, having an array of interconnected unit-cells having electrical elements, the array having a periphery and a middle portion and including interconnecting domains for interconnecting the unit-cells and interconnecting the electrical elements within each of the unit cells and for forming desired logic circuits by changing the interconnections of the electrical elements within each of the unit cells and changing the interconnections between each of the unit cells, the circuit comprising feeder lines, having first portions in the middle portion of the array and second portions, wider than the first portions, in the periphery of the array, operatively connected to the unit-cells, for supplying power to the unit-cells, said feeder lines extending from the periphery of the array toward the middle portion of the array and the first portions being substantially narrowed in width from the periphery of the array toward the middle portion of the array.

4,499,485

SEMICONDUCTOR UNIT

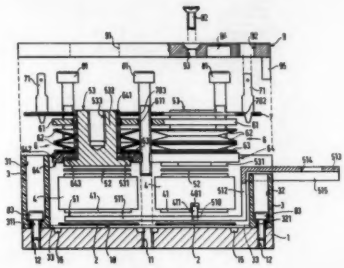
Winfried Schierz, Roth, and Helmut Creutz, Zirndorf, both of Fed. Rep. of Germany, assignors to SEMIKRON Gesellschaft für Gleichrichterbau und Elektronik mbH, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 234,429, Feb. 13, 1981,. This application Oct. 20, 1983, Ser. No. 543,787

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005313

Int. Cl.³ H01L *23/02*

U.S. Cl. 357—74 **30 Claims**



1. In a semiconductor unit composed of at least two semiconductor members each having two opposed ends and provided at each end with a respective current contact, a housing including a metallic base plate and a cover, means for mounting the semiconductor members in electrically insulated and thermally conductive communication with the base plate, external connecting leads, and spring means for establishing pressure contact between the leads and the current contacts, the improvement wherein:

said connecting leads comprise at least one contact rail which defines a lower lead contacting said current contact at that end of at least one of said members which is directed toward said base plate and interposed between said base plate and said at least one of said members;

said contact rail includes a free end region which extends through an opening in said housing to provide an external connection in a selected connection plane;

said connecting leads further comprise an upper lead for each said member arranged concentrically with its respective member, contacting said current contact at that end of its associated member which is directed toward said cover, and provided with threaded means for establishing a screw connection with an external conductor;

said cover is provided with an opening for each said upper lead through which said upper leads extend to expose said threaded means of each said upper lead for connection to an associated external conductor; and

said unit further comprises means securing each said upper lead against rotation relative to said housing.

4,499,486

DEVICE FOR CORRECTING COLOR INFORMATION SUPPLIED BY A TELEVISION CAMERA WITH A VIEW TO IMPROVING THE PERCEPTION OF PICTURES

Michel Favreau, Paris; Jean Bajon, Toulouse, and Serge Soca, Paris, all of France, assignors to Thomson-CSF, Paris, France

Filed May 19, 1982, Ser. No. 379,945

Claims priority, application France, May 22, 1981, 81 10253

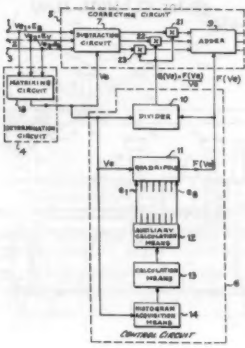
Int. Cl.³ H04N *5/14*

U.S. Cl. 358—37 **8 Claims**

1. A device for correcting color information signals of values V_{e1}, V_{e2} and V_{e3} supplied by a television camera, comprising:

a determination circuit having three inputs respectively receiving the three color information signals and an output, for supplying a signal of value V_e which is a function of the values of the color information signals;

a control circuit having an input coupled to the output of the determination circuit and having an output for supplying a signal of value $G(V)_e=(F(V_e)/V_e)$, in which F is a function such that its histogram has a predetermined distribution chosen for improving the perception of images; and



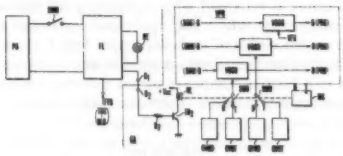
a correction circuit comprising a first, a second, and a third multiplier, each having a first and a second input, and an output, said multipliers first inputs being respectively coupled to three first inputs of the correction circuit receiving the three color information signals, said multipliers second inputs being coupled to a second input of the correcting circuit receiving the value $G(V_e)$, and said multipliers three outputs being respectively coupled to three outputs of the correcting circuit for supplying three corrected color information signals.

4,499,487

CAMERA OPERABLE WITH FLASH AND IN DAYLIGHT AND TUNGSTEN MODES

Makoto Takayama, Kanagawa; Tomotaka Muramoto, Tokyo, and Akimasa Nishimura, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Feb. 17, 1983, Ser. No. 467,348
Claims priority, application Japan, Feb. 26, 1982, 57-31228
Int. Cl.³ H04N 9/04
U.S. Cl. 358—41 **6 Claims**



1. A camera for use with a flash device having means for generating an indication indicative of completion of preparation for flash emission, said camera comprising:

(A) means for selecting a photographic mode of the camera from a first mode suited for photography under day-light illumination and a second mode suited for photography under tungsten-light illumination; and

(B) means responsive to completion of preparation for the flash emission for fixing the photographic mode of the camera at said first mode irrespective of the selection by said selecting means.

2. The camera according to claim 1, further comprising:

image pick-up means for providing an electrical signal indicative of image scanning;

processing means for processing said electrical signal to produce a color image signal; and

control means for controlling color balance of said color image signal produced by said processing means, said control means having a first control mode suited for said first photographic mode and second control mode suited for said second photographic mode;

said selecting means being coupled to said control means to select the control mode from one of said first and second control modes in accordance with the selection of the photographic mode from said first and second photographic modes; and

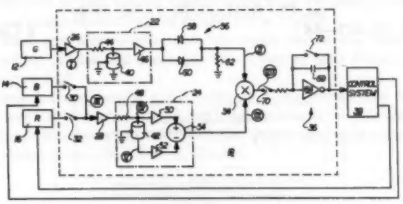
said fixing means being coupled to said control means to fix the control mode thereof at said first control mode in response to the completion of the preparation for the flash light emission of said flash device.

4,499,488

AUTOMATIC REGISTRATION CONTROL SYSTEM FOR COLOR TELEVISION CAMERAS

Charles M. White, and William J. Cosgrove, both of Quincy, Ill., assignors to Harris Corporation, Melbourne, Fla.

Filed Feb. 3, 1983, Ser. No. 463,637
Int. Cl.³ H04N 9/09
U.S. Cl. 358—51 **22 Claims**



1. Apparatus comprising:

first means responsive to a first video signal for providing a first output signal including an AC pulse in timed relation to a scene edge-representative transition in said first video signal;

second means responsive to a second video signal for providing a second output signal including a unipolar pulse in timed relation to a scene edge-representative transition in said second video signal;

means for multiplying said first and second output signals together to provide a product signal whose integral is dependent upon the relative times of occurrence of said AC and unipolar pulses and thus upon the relative times of occurrence of the corresponding transitions in said first and second video signals; and,

means for integrating said product signal to provide an integral signal having a level dependent upon and thus indicative of said relative times of occurrence of said corresponding transitions in said first and second video signals.

4,499,489

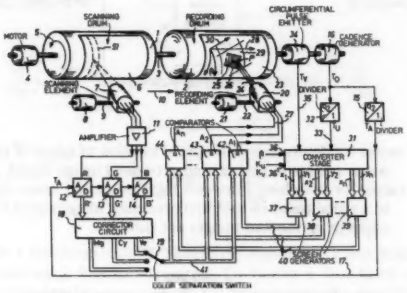
PRODUCTION OF SCREEN PRINTING BLOCKS

Winrich Gall, Klausdorf, and Klaus Wellendorf, Kitzeberg bei Kiel, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 271,102, Jun. 8, 1981, abandoned, which is a continuation of Ser. No. 054,978, Jul. 5, 1979, abandoned. This application Mar. 25, 1983, Ser. No. 479,974

Int. Cl.³ H04N *1/46*

U.S. Cl. 358—75 **50 Claims**



1. A method for producing half-tone reproductions of an original on a recording medium by means of a recording element using rotated screens having any screen angle and any screen line spacing and being formed of periodically repeated, adjacent screen grid elements comprising screen dots varying in size with the tone values of the original, comprising the steps of:

(a) optoelectronically scanning said original line-by-line and dot-by-dot;

(b) generating image values from the scanning representing the tone values of the original;

(c) providing a matrix having a number of matrix elements, said matrix representing said periodically repeated grid elements;

(d) generating a threshold value for each matrix element, said threshold values representing predetermined grey tone values, and said threshold values having amplitudes and a distribution in the matrix according to a predetermined function;

(e) subdividing the recording medium into a plurality of adjacent areal elements which are aligned in scanning directions of the recording element and from which the screen dots of the rotated screen are built up inside each screen grid element; and

(f) during recording medium scanning, generating a recording element recording signal for each areal element to form the screen dots inside the screen grid elements of the rotated screen by comparison of at least one image value with a threshold value of a matrix element whose location within said matrix corresponds to a respective location of said recording medium areal element within said screen grid element of the rotated screen and determining by said comparison of the threshold value and the image value whether the areal element is recorded or not when forming the screen dots.

4,499,490

SCANNING APPARATUS WITH VIDEO CAMERA

Jack B. Morgan, 1657 Parkhills Ave., Los Altos, Calif. 94022

Filed May 10, 1982, Ser. No. 376,326

Int. Cl.³ H04N *7/00, 7/18, 5/26*

U.S. Cl. 358—87 **21 Claims**

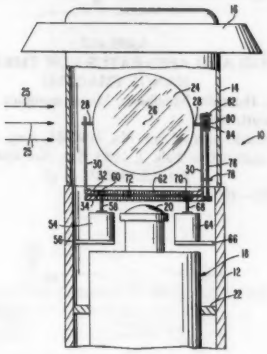
1. Scanning apparatus comprising:

a housing;

a video camera secured in a fixed position in the housing and having a generally vertical optical axis;

a mirror;

means including rotatable first and second gears for mounting the mirror above the video camera for rotation about



a generally vertical axis and for rotation about a generally horizontal axis relative to the video camera; and

a pair of drive motors coupled with respective gears for rotating the mirror about said vertical and horizontal axes, each motor being secured in a fixed position on the housing.

4,499,491

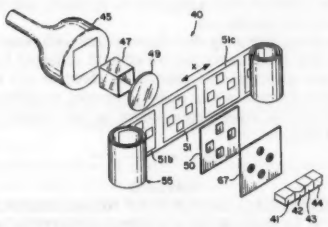
MOVING MAP DISPLAY USING OPTICAL TUNNEL

Mitchell Aron, Harrington Park, and Martin W. Feintuch, Fort Lee, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 21, 1983, Ser. No. 515,825

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—102 **19 Claims**



1. A moving map display for displaying images of continuously changing locations of a map, characterized by:

(a) means for converting electrical signals into optical signals, said means providing a line trace pattern;

(b) image producing means translating the line trace pattern to a plurality of separate images thereof;

(c) film carrier means for aligning a plurality of film frames to preselected positions, the image producing means focusing the images of the line trace patterns onto the positions;

(d) means for receiving light transmitted through the film frames;

(e) means disposed between the light receiving means and the image producing means selectively blocking and transmitting light passing through sections of the aligned film frame so that at any given time light from at least one section is being received by the light receiving means and

light may be blocked from being transmitted through at least one of the sections to the light receiving means; and

(f) means to control the line trace patterns so as to provide signals from the light receiving means representing a composite image of selectively one or more portions of the aligned film frame.

4,499,492

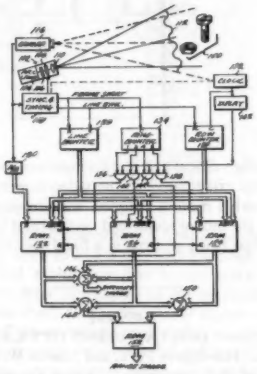
METHOD AND APPARATUS FOR THREE FRAME RANGE IMAGING

Richard A. Hutchin, Marlboro, Mass., assignor to Novon, Inc., Swampscott, Mass.

Continuation-in-part of Ser. No. 409,344, Aug. 18, 1982,. This application Feb. 7, 1983, Ser. No. 464,600

Int. Cl.³ H04N 7/18

U.S. Cl. 358—107 **40 Claims**



1. Apparatus for imaging a scene comprising:

means for illuminating said scene with a moving periodic modulation pattern;

means, offset from said illuminating means, for converting light reflected from a plurality of points in said scene into electrical signals; and

means for determining the relative phase with respect to said periodic modulation pattern of light reflected from each of said points in said scene using three of said electrical signals for each of said points generated at different times, said relative phase being related to the relative range of said points.

4,499,493

MULTIPLE MEASUREMENT NOISE REDUCING SYSTEM USING ARTIFACT EDGE IDENTIFICATION AND SELECTIVE SIGNAL PROCESSING

Dwight G. Nishimura, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 22, 1983, Ser. No. 468,656

Int. Cl.³ H04N 5/32, 1/40

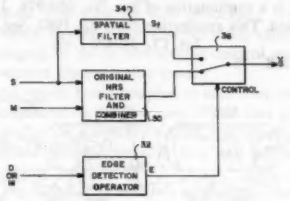
U.S. Cl. 358—111 **14 Claims**

1. In an imaging system, apparatus for reducing extraneous image signals in a processed image signal of an object representing a desired parameter derived from a plurality of measurements comprising:

first processing means for processing said plurality of measurements and producing a first processed image signal representing said desired parameter,

second processing means for processing said plurality of measurements and producing a second processed image signal having a greater signal-to-noise ratio from said first processed image signal,

third processing means interconnected with said first processing means and said second processing means for receiving and combining said first processed image signal and said second processed image signal and producing a third processed image signal,



means for determining the spatial location of edges of extraneous images in said second processed image signal, and means for switching from said third processed image signal to a signal based on said first processed image signal when edges of extraneous images are detected.

4,499,494

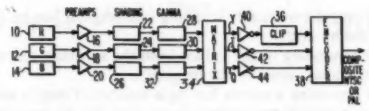
TELEVISION GAMMA CORRECTOR WITH SYMMETRICAL RESPONSE ABOUT BLACK-LEVEL

Robert A. Dischert, Burlington, N.J., and Robert J. Topper, Rockledge, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,233

Int. Cl.³ H04N 5/20, 9/07

U.S. Cl. 358—164 **14 Claims**



1. An improved gamma correction arrangement for a television signal having a normal range of signal amplitude extremes and having a particular signal amplitude extreme recurring regularly, comprising:

a source of said television signal;

a source of synchronizing signals for producing a sampling signal during each of the regular recurrences of said particular signal amplitude extreme;

a reference voltage source;

clamping means coupled to said source of synchronizing signals, to said source of said television signal and to said reference voltage source for clamping said particular signal amplitude extreme to a clamp voltage related to said reference voltage, thereby producing a clamped television signal;

gamma correction translation means coupled to said clamping means for providing an output signal in response to a selected nonlinear transfer function for said clamped television signal over said normal range of said clamped television signal, whereby unavoidable noise superimposed on said television signal creates a noisy television signal which causes said clamped television signal applied to said gamma correction translation means to exceed said normal range, whereby said noise may be rectified and perturb the value of said output signal;

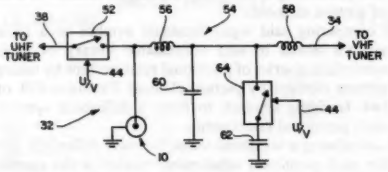
wherein the improvement comprises range extension means coupled to said gamma correction translation means for extending the operating range of said gamma correction translation means whereby it responds to said noisy television signals in a region outside said normal range with a transfer function which is complementary to said selected

nonlinear transfer function thereby reducing said perturbation.

4,499,495
SWITCHING DIPLEXER FOR SINGLE ANTENNA INPUT TELEVISION RECEIVERS

Peter Strammello, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 26, 1982, Ser. No. 401,449
Int. Cl.³ H04N 5/44
U.S. Cl. 358—188 9 Claims



1. In a television receiver selectively operable in a first mode for enabling a first tuning means for tuning a first band of television signal frequencies and in a second mode for enabling a second tuning means for tuning a second band of television signal frequencies having a higher frequency content than said first band, an antenna interface circuit comprising:

an input terminal for receiving RF television signals broadcast over said first and second frequency bands;

switching means for coupling said input terminal to said second tuning means in said second mode of operation and for decoupling said input terminal from said second tuning means in said first mode of operation; and

lowpass filter means coupled between said input terminal and said first tuning means, said lowpass filter means having a first cutoff frequency in said first mode of operation for coupling said first band of signal frequencies to said first tuning means in substantially unattenuated form and having a second lower cutoff frequency in said second mode of operation for facilitating coupling by said switching means of said second band of signal frequencies to said second tuning means in substantially unattenuated form.

4,499,496
SOLID STATE IMAGE SENSING DEVICE

Nobuyoshi Tanaka, Yokohama, and Takao Kinoshita, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 390,055
Claims priority, application Japan, Sep. 17, 1981, 56-146585; Sep. 17, 1981, 56-146586
Int. Cl.³ H04N 3/14
U.S. Cl. 358—213 26 Claims

1. A radiation sensing device comprising:

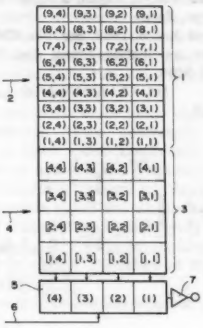
(A) radiation sensing means for generating an electrical indication indicative of a distribution pattern of received radiation representative of television signal frame information;

(B) storing means for storing an electrical indication generated by said sensing means and representative of field information based on the frame image information; and

(C) read-out means for reading out said stored electrical indication from said storing means,

wherein said sensing means includes a first plurality of sensing elements, and said storing means includes a second plurality of storage elements, the second plurality being approximately equal to one-half the first plurality, and

wherein each of said sensing elements has a storage capacity for storing an electrical signal generated in response to a received radiation pattern, while each of said storage elements has a storage capacity for storing an electrical

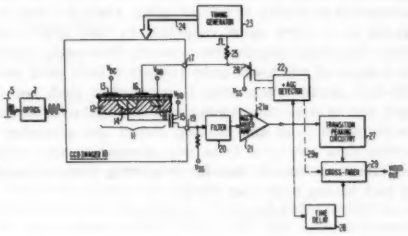


signal, the storage capacity of one storage element being larger than that of one sensing element.

4,499,497
CCD IMAGER WITH IMPROVED LOW LIGHT LEVEL RESPONSE

Peter A. Levine, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 452,914
Int. Cl.³ H04N 3/14
U.S. Cl. 358—213 6 Claims



1. In the method of operating a CCD imager of the type having a floating diffusion output stage, said method comprising the steps of:

periodically introducing charge packets descriptive of image elements under the floating diffusion;

sensing the potential of the floating diffusion following the introduction of each charge packet; and

providing, during reset intervals following each sensing of potential and preceding the next introduction of a charge packet, a conductance path for transfer of charge stored under the floating diffusion to a reset drain-the improvement for providing a video signal with improved signal-to-noise ratio responsive to low light input levels to the imager, which improvement in said method comprises the step of:

reducing the conductance of the path provided during each reset interval for transfer of charge stored under the floating diffusion to the reset drain to such value as to slow the transfer of the charge stored under the floating diffusion to the reset drain during each reset interval in inverse relation to the level of the charge stored under the floating diffusion, whereby there is integration of the charge packets formed in response to low light levels to increase the level of the signal component of sensed potential respective to the noise component thereof.

4,499,498

RUN LENGTH DECODING APPARATUS

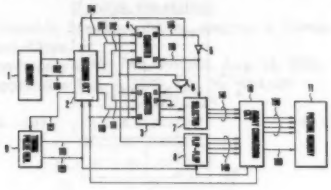
Kazumoto Iinuma, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1983, Ser. No. 456,034

Claims priority, application Japan, Jan. 14, 1982, 57-3403; Jan. 14, 1982, 57-3404

Int. Cl.³ H04N *1/00*

U.S. Cl. 358—261 **3 Claims**



1. In run length decoding apparatus of the type comprising a decoding circuit which decodes a series of run length encoded data to sequentially output binary data indicative of respective run lengths, and means for decoding a white or black signal having a number of bits represented by an output value of said decoding circuit so as to sequentially accumulate decoded signals in a picture memory device, the improvement which comprises a lower order counter to be set with a surplus less than n (an integer larger than 2) of the output value of said decoding circuit, an upper order counter to be set with an upper order value, counts of said upper order counter being decremented according to a clock pulse, a selector which, in response to a carry signal outputted by said upper order counter selects and outputs either one of a fixed value n and an output signal of said lower order counter at each clock pulse, a flip-flop circuit whose state is reversed at each one run length, and an array conversion circuit inputted with decoded data outputted from said flip-flop circuit and a number of effective data outputted from said selector to sequentially array effective decoded data for outputting them as parallel data each having more than n bits.

4,499,499

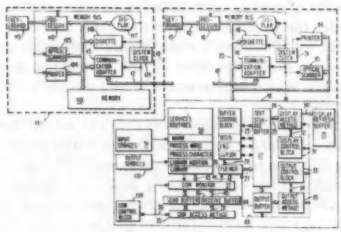
METHOD FOR IDENTIFICATION AND COMPRESSION OF FACSIMILE SYMBOLS IN TEXT PROCESSING SYSTEMS

Norman F. Brickman, Potomac, and Walter S. Rosenbaum, Bethesda, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,230

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—263 **6 Claims**



1. A method for deciphering the identity of facsimile symbols in a string of facsimile symbols input to a first information processing system for storage and transmission to a second remote information processing system comprising the steps of:

(a) storing an addressable library of facsimile symbols in said first information processing system including sensitive feature data points associated with certain ones of said facsimile symbols;

(b) storing an identical addressable library of facsimile symbols in said second remote information processing system;

(c) storing a predetermined maximum match value in said information processing systems for identifying an input facsimile symbol;

(d) receiving an input facsimile symbol in said first information processing system from an optical scanner as a matrix of picture elements;

(e) comparing said input facsimile symbol to a facsimile symbol stored in said addressable library of facsimile symbols in a series of positional relationships by taking the picture element by picture element Exclusive-OR of the two facsimile symbols to form a difference symbol for each positional relationship;

(f) calculating a weighted value for each difference symbol for each positional relationship based on the number of picture elements in the difference symbol and the clustering of the difference picture elements into groups of contiguous picture elements;

(g) selecting the difference symbol which produces the lowest calculated weighted value for the positional relationship;

(h) amplifying the weighted value of the selected difference symbol by the sensitive feature data points for the library facsimile symbol;

(i) repeating steps e through h for each library facsimile symbol;

(j) comparing the amplified weighted value to the predetermined maximum match value;

(k) selecting the library facsimile symbol as a match for the input facsimile symbol when the amplified weighted value compares less than the maximum match value;

(l) repeating steps d through k for each character in the string of characters input to said first information processing system;

(m) transmitting only the library address and the page location of each facsimile symbol that matches a library facsimile symbol from said first information processing system to said second remote information processing system.

4,499,500

TWO-SIDE IMAGE FORMING APPARATUS

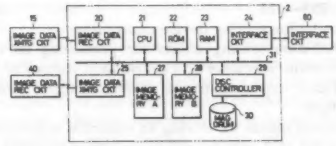
Nao Nagashima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1982, Ser. No. 392,340

Claims priority, application Japan, Jul. 7, 1981, 56-106405

Int. Cl.³ H04N *1/26, 1/40*

U.S. Cl. 358—296 **8 Claims**



1. A two-side image forming apparatus comprising:

first memory means for storing image information corresponding to a first image;

second memory means for storing image information corresponding to a second image;

image forming means for reproducing an image on the first or second side of a recording sheet; and

control means adapted for reproducing the first image on the

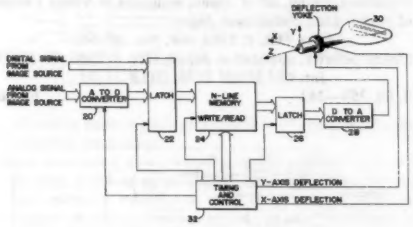
first side of said recording sheet and the second image on the second side of said recording sheet by means of said image forming means according to the image information stored in said first memory means and said second memory means.

4,499,501

IMAGE TRANSFER METHOD AND APPARATUS

Joern B. Eriksen, Oregon City, and Pierre Radochonski, Lake Oswego, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 1, 1982, Ser. No. 413,858
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—302 **5 Claims**



1. A method of transferring image information associated with at least one line of an image from an image source to an image receiving medium, comprising the steps of:

recording the image information associated with said one line of said image through a first information transmission path onto a line of said image receiving medium; and

re-recording the image information associated with said one line of said image through a second information transmission path onto said line of said image receiving medium;

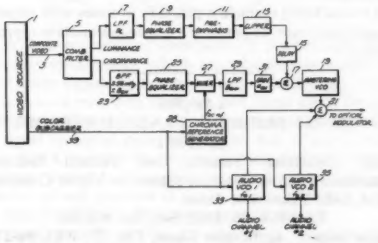
whereby the quality of the image disposed on said line of said image receiving medium representing the image information associated with said one line of said image source is improved following the re-recording step.

4,499,502

COMPRESSED BANDWIDTH FREQUENCY MODULATION SIGNAL FORMAT APPARATUS AND METHOD

Wayne R. Dakin, Huntington Beach, and Jordan Isailovic, Fountain Valley, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Filed Jul. 12, 1982, Ser. No. 397,309
Int. Cl.³ H04N *9/491*
U.S. Cl. 358—310 **20 Claims**



1. A method for generating a compressed bandwidth frequency modulation carrier signal, relative to a full-luminance/-full-color bandwidth frequency modulation carrier signal, and containing encoded signal information representing a composite color video signal and at least one audio signal, wherein a full-luminance/full-color carrier signal has an upper carrier frequency limit of f_{max1}, a white level carrier frequency of f_{w1}, a blanking level carrier frequency of f_{b1}, a sync tip carrier frequency of f_{s1}, a luminance video bandwidth B_{L1}, a color video bandwidth B_{CH1}, a nominal color carrier frequency of $f_{sc1}=3.579$ mHz, and an audio subcarrier frequency of f_{as1}, said method comprising the steps of:

(a) providing a composite color video signal having a compressed luminance video component of bandwidth $B_{L2}=\frac{1}{2}B_{L1}$, a color video component of compressed bandwidth B_{CH2} and nominal frequency f_{sc2}, and a synchronizing component consisting of horizontal and vertical synchronization pulses and a color sync burst;

(b) providing a video carrier signal having an upper carrier frequency limit f_{max2}, a white level carrier frequency f_{w2}, a blanking level carrier frequency of f_{b2}, and a sync tip carrier frequency of f_{s2};

(c) providing at least one audio frequency signal having a bandwidth B_{a2};

(d) providing an audio subcarrier signal having a nominal frequency of f_{as2};

(e) selecting f_{sc2} by

(i) maximizing the variable B_{CH2} in the equation set,

$$f_{sc2} + B_{CH2} \leqq \tfrac{1}{4} f_{b1}$$

$$3f_{sc2} - 2B_{CH2} \geqq \tfrac{1}{4} f_{w1};$$

(f) frequency modulating said video carrier signal with said composite color video signal while controlling frequency deviation to produce a frequency modulated carrier in which,

$f_{max2}=\frac{1}{4}f_{max1}$,

$f_{w2}=\frac{1}{4}f_{w1}$,

$f_{b2}=\frac{1}{4}f_{b1}$, and

$f_{s2}=\frac{1}{4}f_{s1}$;

(g) frequency modulating said audio subcarrier with said audio frequency signal; and

(h) summing the modulated video and audio carrier signals.

17. A method for recording audio and video information onto a recording medium having a predetermined useful frequency upper limit f_{max}, comprising the steps of:

(a) providing a video carrier signal;

(b) providing a composite video signal comprising a luminance video signal having a bandwidth B_L, and a color video signal having a predetermined nominal frequency f_{sc2} and chrominance bandwidth B_{CH2};

(c) providing first and second audio frequency signals a_1 and a_2;

(d) providing an audio subcarrier f_{a1} for audio signal a_1, and an audio subcarrier f_{a2} for audio signal a_2;

(e) frequency modulating said video carrier signal with said composite video signal to produce a carrier frequency f_{b2} at blanking level of the composite video signal and to produce a carrier frequency f_{w2} at white level of the composite video signal;

(f) selecting said audio subcarrier frequency f_{a1} according to the relationship,

$$0 \leqq f_{a1} \leqq f_{b2} - 2f_{sc2};$$

(g) selecting said audio subcarrier frequency f_{a2} according to the relationship,

$$f_{sc2} - B_{CH2} \geqq f_{a2} \geqq f_{w2} - 2f_{sc2};$$

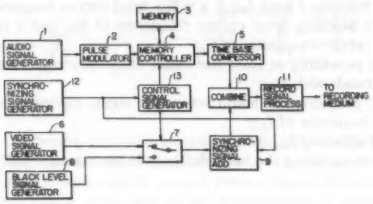
(h) frequency modulating said audio subcarriers f_{a1} and f_{a2} with said audio frequency signals a_1 and a_2, respectively;

(i) summing said frequency modulated video and audio signals, and recording the summed signals on the recording medium.

4,499,503
VIDEO FORMAT SIGNAL RECORDING AND REPRODUCTION SYSTEM

Tsutomu Suzuki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 16, 1982, Ser. No. 358,733
Claims priority, application Japan, Mar. 17, 1981, 56-38497
Int. Cl.³ H04N *9/491*
U.S. Cl. 358—316 **18 Claims**

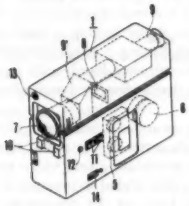


13. A system for reproducing a video format signal in which audio data to be reproduced along with video data is inserted and recorded for a predetermined period corresponding to at least one of the horizontal lines which occur successively within a selected portion of each field period of said video format signal, comprising means for extracting said audio data in said period and subjecting said data to audio reproduction processing, and means for adding, in said period of said video format signal, a signal corresponding to a predetermined color level to perform video reproduction processing.

4,499,504
VIDEO SYSTEM

Hiroo Edakubo, Tokyo, and Masaya Maeda, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha

Filed Mar. 23, 1982, Ser. No. 361,041
Claims priority, application Japan, Mar. 31, 1981, 56-45712
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—335 **15 Claims**



1. A device used solely for recording image pick-up video signals, comprising:

image pick-up means to convert an object image into electrical signals;

recording means to record on a long sized recording medium such video signals corresponding to said electrical signals;

a transporting mechanism to transport said long sized recording medium;

a main motor to produce a first driving power for transporting the recording medium at a first speed by the transporting mechanism;

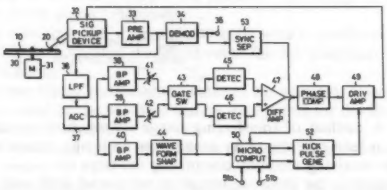
receiving means to mechanically receive a second driving power from an external auxiliary motor provided separately from said device to produce a second driving power for transporting the recording medium at a second speed which is faster than the first speed by the transporting mechanism; and

a transmission mechanism to transmit the second driving power received by said receiving means to the transporting means.

4,499,505
APPARATUS FOR PLAYING BACK VIDEO SIGNALS RECORDED ON A ROTARY RECORDING MEDIUM ON SEVERAL QUASI-SLOW MOTION REPRODUCTION MODES

Hiroyuki Sugiyama, Isehara; Ryozo Abe, Yokohama, and Kenji Yoshihara, Chiba, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 1, 1981, Ser. No. 307,582
Claims priority, application Japan, Oct. 3, 1980, 55-138329
Int. Cl.³ H04N *5/76*; G11B *21/08*
U.S. Cl. 358—342 **6 Claims**



1. An apparatus for playing back a rotary recording medium in which an even number of fields of video signals are recorded on each track turn of a spiral track, said apparatus comprising:

reproducing transducer means having a reproducing element for scanning over tracks on said rotary recording medium in order to reproduce recorded signals, and shifting means responsive to a signal applied thereto for shifting said reproducing element by one track pitch in a radial direction across said rotary recording medium; and

circuit means for producing and applying a shifting signal to said shifting means to cause said reproducing element to shift by one track pitch toward an outer adjacent track on said rotary recording medium every time said reproducing element reaches one predetermined position on said rotary recording medium, and said means for producing the shifting signal operating responsive to a quasi-slow-motion ratio and to the direction of the quasi-slow-motion reproduction when said reproducing element reaches another predetermined position on said rotary recording medium,

said tracks being scanned a plurality of times with respect to each track turn, to perform a quasi-slow-motion reproduction.

4,499,506
VIDEO SIGNAL RECORDING AND/OR REPRODUCING SYSTEM

Nobuaki Takahashi, Yamato, and Takeshi Shibamoto, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 25, 1982, Ser. No. 352,305
Claims priority, application Japan, Feb. 27, 1981, 56-27845; Feb. 27, 1981, 56-27846; Mar. 30, 1981, 56-46699
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—343 **14 Claims**

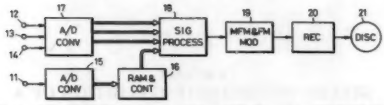
1. A video signal recording system comprising:

first converting means for sampling an analog composite

video signal which is related to a still picture at a first sampling frequency and for converting the analog composite video signal into a digital video signal;

memory means responsive to said first converting means for storing an output digital video signal and for reading out a sample of the stored digital video signal at a second sampling frequency, said second sampling frequency being lower than said first sampling frequency, said digital video signal read-out from said memory means corresponding to only a video signal duration which excludes a synchronizing signal duration of said analog composite video signal;

second converting means for converting the analog audio signals into a digital audio signal in response to a sampling



of analog audio signals of a plurality of channels at a third sampling frequency;

signal processing means simultaneously supplied with parallel data, made up of the digital video signal read-out from said memory means and with the output digital audio signals of said second converting means, said signal processing means converting the parallel data into a serial data; and

reading means for recording the serial data from said signal processing means on a recording medium,

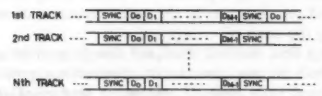
a product of a quantization number of said digital video signal read-out from said memory means and said second sampling frequency being substantially equal to a product of a quantization member of said digital audio signals and said third sampling frequency.

4,499,507

DATA REPRODUCING APPARATUS FOR REPRODUCING DIGITAL DATA RECORDED ON MULTI-TRACKS

Yasuhiro Yamada, Fussa, and Takaro Mori, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Sep. 30, 1982, Ser. No. 429,334
Claims priority, application Japan, Oct. 13, 1981, 56-163122
Int. Cl.³ G11B *15/02, 5/09*
U.S. Cl. 360—26 **6 Claims**



1. A data reproducing apparatus for reproducing data recorded on multi-tracks, which reproduces data within reproduced frame signals by simultaneously reproducing a plurality of tracks on a recording medium, said frame signal being constituted by said data obtained by subjecting an analog information signal to digital pulse modulation and at least a synchronizing signal, signals obtained by time-sequentially composing said frame signals in terms of frame signals being dispersed and recorded on said plurality of tracks on said recording medium, said data reproducing apparatus comprising:

a signal transducer for simultaneously reproducing said frame signals recorded on said recording medium from said plurality of tracks;

a write-in address generating circuit provided in each of transmission systems for reproduced signals from each track of said plurality of tracks obtained in parallel from said signal transducer, for generating a write-in address indicating the number of bits of data within one frame signal from a counter which counts clock pulses having a period equal to the transmission bit rate, said write-in address generating circuit being preset or cleared by a detection pulse obtained by detecting said synchronizing signal within the reproduced frame signals;

a memory into which data within frame signals reproduced from each track among said plurality of tracks are written, and from which said written-in data are read out; and

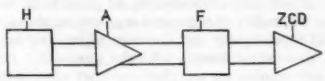
memory control means for controlling said memory so as to successively and recursively apply the data within the frame signals reproduced from each track among said plurality of tracks and write in the data at the write-in addresses obtained from said write-in address generating circuit, and read out the written-in data of each of the tracks from said memory with the timing arranged after a predetermined time has elapsed.

4,499,508

DIGITAL MAGNETIC RECORDING

Archibald M. Pettigrew, "West Glenn", West Glenn Rd., Kilmacolm, Renfrewshire, England

Filed Feb. 18, 1982, Ser. No. 349,845
Claims priority, application United Kingdom, Feb. 20, 1981, 8105396
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—41 **9 Claims**



1. A method of data recovery in digital magnetic recording, comprising the steps of deriving an information-carrying data signal from a recording medium, delaying the third harmonic of said data signal with respect to the fundamental of said data signal by one half period of said third harmonic to produce a modified signal, and deriving a digital information-carrying pulse train from said modified signal wherein the delaying of said third harmonic is effected by passing the data signal through two resonant networks whose resonant frequencies are equal to the frequency of said third harmonic.

4,499,509

TAPE POSITION CONTROL APPARATUS

Seiichi Gohda, and Mamoru Ishiguro, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 132,885, Mar. 24, 1980, abandoned.
This application Feb. 16, 1982, Ser. No. 349,155
Claims priority, application Japan, Mar. 29, 1979, 54-37429
Int. Cl.³ H04N *5/782*
U.S. Cl. 360—72.1 **6 Claims**

1. A tape position control apparatus for video tape recorders comprising:

a. tape drive control means for controlling the tape movement of a video tape storing segmented video information installed in a video tape recorder;

b. means for reproducing pulses in response to control signals recorded on a track on said video tape;

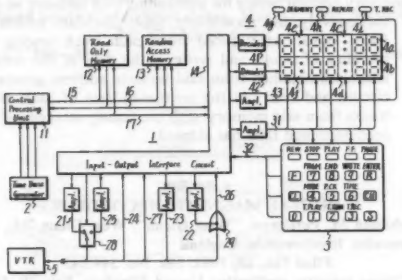
c. count means for counting the number of said control pulses reproduced from said control signals on a track on said video tape;

d. segment data memory means for storing data for a segment which is requested, indicating the number of said data control pulses from one end of said video tape at least for each point of segmented video information recorded on said video tape with reference to a segment number corresponding to a segment of the segmented video information;

e. input means for making a request for at least searching one segment of said segmented video information by generating a segment number;

f. comparison means connected and responsive to said input means and connected to said segment data memory means and to said count means for comparing the currently counted number stored in said count means with the data for the requested segment;

g. command signal generating means connected to said tape drive control means for generating command signals and



supplying said command signals to said tape drive control means in order to search the requested video information, by controlling said drive means to move said tape; and

h. segment number memory means connected to said input means and to said command signal generating means for storing a plurality of requested segment numbers supplied by said input means and for controlling said command signal generating means, whereby respective requested video information are searched one after another in accordance with the requested order in which said segment numbers are stored.

4,499,510

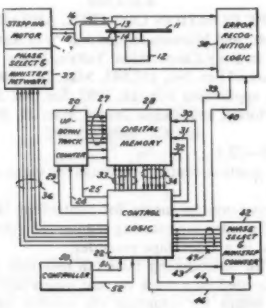
PRECISION ALIGNMENT SYSTEM FOR INFORMATION STORAGE DEVICES

Philip A. Harding, Rancho Palos Verdes, and Leonard Schupak, Irvine, both of Calif., assignors to Weltec Digital, Inc., Anaheim, Calif.

Filed Aug. 3, 1982, Ser. No. 404,749

Int. Cl.³ G11B 5/58, 21/10

U.S. Cl. 360—77 **9 Claims**



1. In a system for controlling read-write head position of a digitized information storage device, the device including a magnetizable medium for recording information in tracks having a predetermined nominal spacing; a read-write head; means for driving the medium so that the head scans the tracks; and motor means for traversing the head for registration with any selected track, the improvement comprising memory means for digitally storing the location of each track in which the least significant digits identify fractional values of the nominal track spacing, and means for controlling the said motor means to traverse the head to optimum registration with any selected track responsive to the said memory means and employing the said least significant digits to control the motor means by fractional portions of the said nominal value.

4,499,511

SYSTEM FOR DETECTING POSITION OF A READ-WRITE HEAD IN SEEK OPERATION ON A DISK MEMORY HAVING DATA SERVO SPECTORS

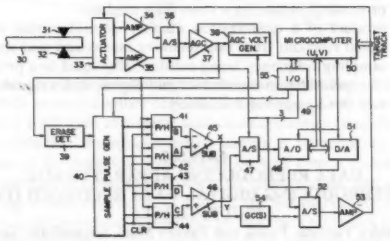
Toshihiro Sugaya, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 23, 1983, Ser. No. 469,144

Claims priority, application Japan, Feb. 24, 1982, 57-28509; Jun. 14, 1982, 57-101612

Int. Cl.³ G11B 21/08

U.S. Cl. 360—78 **9 Claims**



1. A method of detecting the position of a head which is moved by an actuator to seek a selected data track on a disk comprising data sectors each having concentric data tracks, and servo sectors each having concentric servo tracks and embedded between said data sectors, a two-phase servo information pattern having a period of 4 tracks being recorded on each of said servo sectors in the radial direction of said disk, comprising the steps of:

extracting first, second, third and fourth position information from the two-phase servo information reproduced by said head from each of said servo sectors of said disk which is rotated during a seek operation;

forming a first position signal indicative of a difference between the first and second position information, and a second position signal indicative of a difference between the third and fourth position information;

forming a third position signal indicative of a sum of the first and second position signals and a fourth position signal indicative of a difference between the first and second position signals;

detecting a track within one period of the servo information pattern on which said head is present in accordance with the first and second position signals; and

detecting the present position of said head within the detected track in accordance with either one of the third and fourth position signals which depends on the detected track.

4,499,512
REEL DRIVE SYSTEM OF MAGNETIC RECORDING AND REPRODUCING APPARATUS

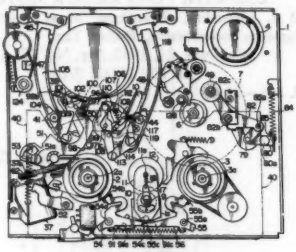
Masashi Yoshida, Nakaminato; Noboru Katohno, Mito; Hajime Yokota, Katsuta, and Masao Okayama, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 3, 1982, Ser. No. 438,766

Claims priority, application Japan, Nov. 6, 1981, 56-177159; Nov. 20, 1981, 56-185370

Int. Cl.³ G11B *5/00, 15/00*

U.S. Cl. 360—90 **24 Claims**



1. A magnetic recording reproducing apparatus wherein a magnetic head is brought into contact with a magnetic tape wound on a pair of reels for effecting magnetic recording and reproducing of information, the apparatus comprising:

(a) a first motor capable of rotation in the normal and the reverse direction;

(b) a drive pulley rotatable about a support shaft located in a predetermined position between said pair of reels;

(c) oscillating idler means connected to said drive pulley an automatically oscillatable around said support shaft dependent upon the direction of rotation of said drive pulley to drivingly engage with one of said pair of reels for rotating the reel;

(d) a first transmitting path for directly transmitting the rotation of said first motor to said drive pulley;

(e) a second transmitting path for transmitting the rotation of said first motor to said drive pulley through a slip mechanism for obtaining a desired output torque; and

(f) a transmitting path switching mechanism for selecting one of said first and second transmitting paths depending on the operation mode.

4,499,513
RECORDING AND/OR REPRODUCING APPARATUS

Hiroyuki Umeda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 26, 1982, Ser. No. 342,926

Claims priority, application Japan, Jan. 31, 1981, 56-13264; Jan. 31, 1981, 56-13266

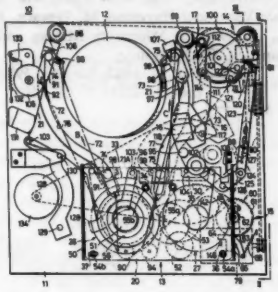
Int. Cl.³ G11B *15/30, 23/04, 15/66, 15/32*

U.S. Cl. 360—96.3 **16 Claims**

1. A recording and/or reproducing apparatus for recording and/or reproduction when loaded with a tape cassette having a cassette case including a supply side reel and a take-up side reel for winding a tape, said recording and/or reproducing apparatus comprising:

a reel driving shaft for relatively entering the bottom of said cassette case to engage a center part of and rotate one of said reels when said tape cassette is loaded into a predetermined position within said recording and/or reproducing apparatus;

a rotation transmitting means for engaging a part of and rotating the other of said reels, with said engaging part being at a part other than a center part thereof; and



means for alternatively driving the reel driving shaft and the rotation transmitting means in a direction in which said one reel and the other reel alternatively wind the tape.

4,499,514
DISC DRIVE APPARATUS

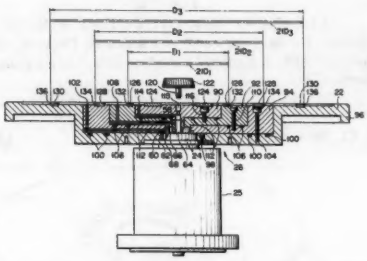
Kunio Yamamiya; Hiroshi Kodama; Ken Ohshima; Shoji Yoshikawa; Kiichi Kato, and Masaharu Sakamoto, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 362,614

Claims priority, application Japan, Mar. 31, 1981, 56-48007; Mar. 31, 1981, 56-46397[U]; Mar. 31, 1981, 56-46398[U]

Int. Cl.³ G11B *5/012*

U.S. Cl. 360—97 **13 Claims**



1. In a disc inspection apparatus, a disc drive for driving a disc selected from discs of various diameters with and without a central hole, the disc drive for disc inspection comprising:

a turntable;

a turntable support for rotatably supporting said turntable;

driving means for driving said turntable;

a centering member for mounting a disc with a central hole;

holding means, disposed at the center of rotation of said turntable, for detachably holding said centering member;

a plurality of elastic disc support members which are coaxial with the center of rotation of said turntable, which extent from the surface of said turntable, and which form a plurality of annular shapes;

centering index means, disposed on said turntable, for centering a disc without a central hole;

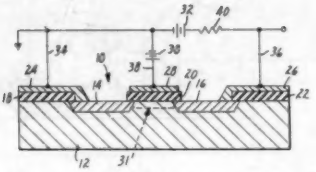
suction means; and

suction channel means, one end of which is open to the surface of said turntable and the other end of which is connected to said suction means, for fixing on at least one of said disc support members, a disc selected from discs of various diameters with or without a central hole and placed on said at least one disc support member.

4,499,515
INTEGRATED MAGNETOSTRICTIVE-PIEZORESISTIVE MAGNETIC RECORDING PLAYBACK HEAD

Chester Piotrowski, White Bear Lake, and Neil W. Loeding, Mounds View, and Raymond M. Warner, Jr., Edina, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 14, 1982, Ser. No. 398,419
Int. Cl.³ G11B *5/12, 5/30*
U.S. Cl. 360—113 **21 Claims**



1. A magnetic sensor comprising

a magnetostrictive stratum

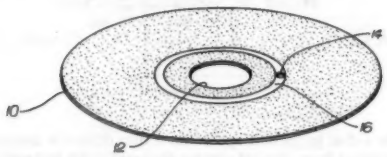
a piezoresistive stratum coupled to the magnetostrictive stratum enabling strain magnetically induced in the magnetostrictive stratum to produce in said piezoresistive stratum a corresponding change in the electrical resistivity thereof, and

means for sensing said change in resistivity and for supplying an electrical output signal solely in response thereto which is representative of the intensity of magnetic fields impressed upon said magnetostrictive stratum and which is directly coupled to said piezoresistive stratum to monitor the change in resistivity.

4,499,516
CLEANING DISK WITH OPAQUE RING

Richard T. Purdy, Inglewood, and Alden H. Packard, Glendora, both of Calif., assignors to Perfect Data Corporation, Chatsworth, Calif.

Filed Feb. 8, 1982, Ser. No. 346,557
Int. Cl.³ G11B *5/41, 3/58, 23/50*
U.S. Cl. 360—128 **18 Claims**



1. A cleaning disk for cleaning magnetic heads in a flexible disk system, wherein the flexible disk system incldues a light source and light sensor for detecting the presence of a disk therein, said cleaning disk comprising:

a disk made of an absorbant and porous material and having a central opening through which the drive unit of the flexible disk system passes, said disk further including a sensing area which selectively prevents light from the light source from striking the light sensor, said sensing area including a first section of substantially opaque material applied to the disk in the form of a ring located near the central opening and a second section which is substantially transparent formed in the disk and located in the ring, wherein the flexible disk system rotates the cleaning disk to alternatly bring the first and second section in a position between the light source and light sensor.

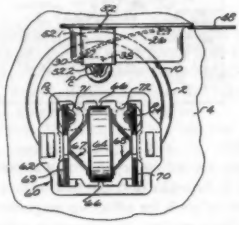
11. A cleaning disk for use with flexible disk systems comprising:

a disk made of fibrous material and adapted to be saturated with a cleaning solution, said disk including a central opening, said disk further including a ring shaped area near the central opening, said ring shaped area including a first section comprised of an opaque material applied to the disk and a second section comprised of a light transmitting area.

4,499,517
MOTOR PROTECTOR PARTICULARLY SUITED FOR USE WITH COMPRESSOR MOTORS

Richard J. Lisauskas, Wrentham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 14, 1983, Ser. No. 551,619
Int. Cl.³ H02H *7/085*
U.S. Cl. 361—24 **13 Claims**



1. A motor protector particularly adapted for use with compressors having a compressor shell and at least three pins electrically separated from one another and from the shell extending through the shell, the pins electrically connected to the windings of a motor disposed within the shell, the first pin connected to a start winding, the second pin connected to a main winding and the third pin connected to a common connection between the start and main winding; the first and second pins adapted to be connected to motor starting means having pin receiving terminals on the motor protector comprising

a thermally and electrically conductive metallic housing generally in the configuration of a parallelepiped having a bottom wall and four side walls extending therefrom to form a switch chamber, a thermally and electrically conductive lid to close the chamber, electrically insulative gasket means disposed between the housing and the lid to electrically separate the housing from the lid and means to attach the lid to the housing,

a thermally responsive switch means disposed in the chamber adapted to connect and disconnect the housing and the lid upon the occurrence of selected thermal conditions, a portion of the switch means mounted on the lid and another portion of the switch means mounted in the housing, and terminal means respectively attached to the housing and the lid,

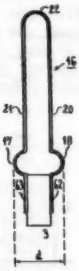
the terminal means attached to the housing comprising a metallic electrically and thermally conductive mounting bracket having two opposite ends, one end bonded to the housing in good electrical and heat transfer relation therewith and the other end formed into a female pin connector configuration adapted to be received on the third pin, the bracket adapted to suspend the protector on the third pin so that it is physically and thermally separated from the motor starting means, a direct metal to metal heat conductive path extending from the main and start windings through the third pin, through the protector mounting bracket, through the protector housing to the thermally responsive switch means.

4,499,518

PROCESS FOR THE PRODUCTION OF AN ELECTRONIC COMPONENT ENCLOSED IN A HOUSING AND APPARATUS FOR CARRYING OUT THE PROCESS

Jean Anne, Bagnolet, France, assignor to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques, Bagnolet, France

Filed Dec. 14, 1982, Ser. No. 449,695
Claims priority, application France, Dec. 31, 1981, 81 24578
Int. Cl.³ H01G 1/14, 7/00
U.S. Cl. 361—306 **26 Claims**



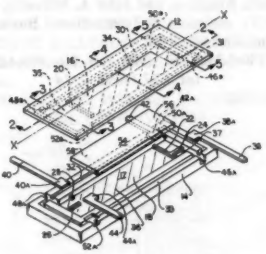
12. An electronic component comprising at least two lateral surfaces to which are soldered the second extremities of an electrical connection in the form of a hairpin comprising two parallel branches interconnected at their first extremity, in which on each of its branches and close to their second extremity, the said hairpin has a convex part, the distance between the said convex parts having a predetermined value (d) greater than the distance between the two lateral surfaces of the component.

4,499,519

DECOUPLING CAPACITOR AND METHOD OF MANUFACTURE THEREOF

David S. Fishman, West Hartford, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Nov. 14, 1983, Ser. No. 552,107
Int. Cl.³ H01G 1/14, 7/00, 9/00
U.S. Cl. 361—306 **40 Claims**



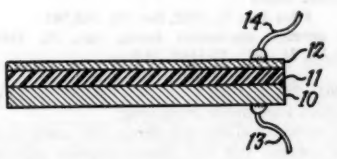
1. A capacitor including:
a first molded housing segment;
a first border segment around the periphery of said first molded housing segment;
a second molding housing segment;
a second border segment around the periphery of said second molded housing segment;
said first and second border segments being in facing and abutting contact and being bonded together;
a recess in at least one of said molded housing segments;
said first and second molded housing segments cooperating to define within said border segments an interior cavity having opposed first and second face surfaces, said first face surface being on said first molded housing segment and said second face surface being on said second molded housing segment;
a first layer of electrically conductive material on a first part of said second face surface of said first housing segment, a second part of said first face surface being electrically nonconductive;
a second layer of electrically conductive material on part of said second face surface of said second housing segment, a second part of said second face surface being electrically nonconductive;
a flat dielectric element in said cavity, said dielectric element having first and second opposed faces, with a first electrically conductive layer on said first face and a second electrically conductive layer on said second face;
said first layer of electrically conductive material on said first part of said first face surface of said first housing segment being physically and electrically connected to said first electrically conductive layer on said dielectric element, and said second layer of electrically conductive material on said first part of said second face surface of said second housing segment being physically and electrically connected to said second electrically conductive layer on said dielectric element;
first electrically conductive terminal pin means sandwiched between said first part of said first face surface of said first housing segment and said second part of said second face surface of said second housing segment, said first electrically conductive terminal pin means being electrically connected to said first layer of electrically conductive material on said first part of said first face surface of said first housing element;
second electrically conductive terminal pin means sandwiched between said second part of said first face surface of said first housing segment and said first part of said second face surface of said second housing segment, said second electrically conductive terminal pin means being electrically connected to said second layer of electrically conductive material on said first part of said second face surface of said second housing element; and
passage means in at least one of said border segments for passage of said first and second terminal pins.

4,499,520

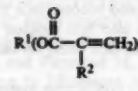
CAPACITOR WITH DIELECTRIC COMPRISING POLY-FUNCTIONAL ACRYLATE POLYMER AND METHOD OF MAKING

Stanley W. Cichanowski, Bennington, Vt., assignor to General Electric Company, Hudson Falls, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,873
Int. Cl.³ H01G 1/01, 7/00; H01B 3/00
U.S. Cl. 361—311 **20 Claims**



1. A capacitor comprising two electrodes separated by a dielectric member, said dielectric member comprising a polymer of at least one polyfunctional acrylate having the formula



(I)

wherein:

R^1 is a hydrocarbon or substituted hydrocarbon radical containing at least 4 carbon atoms;

R^2 is hydrogen or an alkyl radical containing 1–5 carbon atoms; and

n is from 2 to 6.

4,499,521

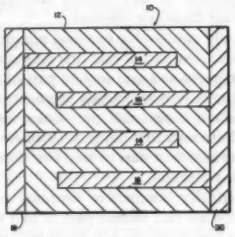
LOW-FIRE CERAMIC DIELECTRIC COMPOSITIONS FOR MULTILAYER CERAMIC CAPACITORS

Robert T. McSweeney, and Stanley A. Long, both of Valencia, Calif., assignors to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 417,258, Sep. 13, 1982, Pat. No. 4,459,364. This application Dec. 16, 1982, Ser. No. 562,324

Int. Cl.³ H01G *4/12*

U.S. Cl. 361—321 **7 Claims**



1. A multilayer capacitor comprising at least two layers of a low-fire ceramic dielectric composition separated by an electrode layer, characterized in that:

the ceramic dielectric composition meets or exceeds EIA specification X7R and consists essentially of a reacted mixture of:

83 to 91 weight percent $BaTiO_3$;

8 to 13 weight percent Bi_2O_3;

up to 4 weight percent Nb_2O_5;

0 to 1.8 weight percent TiO_2 or SnO_2; and

0.04 to 0.18 weight percent $MnCO_3$; and

the electrode layer consists essentially of a mixture of at least 65 atomic percent silver and not more than 35 atomic percent palladium.

4,499,522

FLYBACK TRANSFORMER

Kenzi Nakamura, Katano, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 30, 1982, Ser. No. 393,767

Claims priority, application Japan, Jun. 30, 1981, 56-98145[U]; Jul. 31, 1981, 56-114811[U]

Int. Cl.³ H01F *27/04, 27/06*

U.S. Cl. 361—331 **19 Claims**

1. A flyback transformer comprising:

a casing having a coil disposed therein, said casing providing a first opening, said first opening disposed adjacent the periphery of said casing, said casing further having a plurality of terminal legs extending therefrom and electrically connected to said coil;

a first terminal positioned in said first opening and electrically connected with said coil;

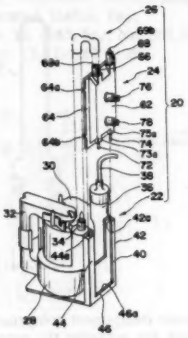
mounting means disposed in the outside of said casing securing a component on the peripheral surface of said casing;

a component housing having a second opening formed thereon and at least one terminal pin extending therefrom and electrically connected thereto;

an electrical resistance element disposed within said component housing;

a second terminal positioned in said second opening and electrically connected with said electrical resistance element;

engaging means, disposed on said component housing, in cooperative engagement with said mounting means such



that said component housing is detachably mounted on the surface of said casing, the axial direction of said first opening is aligned in parallel with the axial direction of said second opening, and such that said terminal pin is in parallel with and extending in the same direction as said terminal legs such that said terminal legs and terminal pin extend through a plane perpendicular thereto so as to be mounted on a common circuit board; and

connector means providing an electrical connection between said first terminal and said second terminal, said connector means disposed between said first and second terminals.

4,499,523

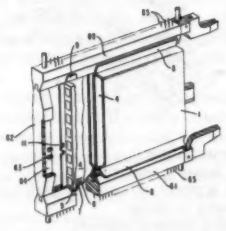
ELECTRONIC COMPONENT ASSEMBLY WITH A PRINTED CIRCUIT BOARD UNIT AND COVER

John B. Gillett, Kingston, and John A. Miraglia, West Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,427

Int. Cl.³ H05K *7/14*

U.S. Cl. 361—383 **15 Claims**



2. In an electronic component assembly including a printed circuit board unit with electrical contact pads disposed along one edge thereof, and a cover constructed from a single member containing said printed circuit board unit, said cover comprising:

hinge means folding said cover over said printed circuit board unit;

sealing means retaining said cover in a closed position and maintaining said cover in fixed contact with said printed circuit board unit; and

flexible flap means, associated with said printed circuit board unit edge and integral with said cover, movable between a relaxed first position wherein the flap means conceals said electrical contact pads, and a flexed second position wherein the flap means exposes said electrical contact pads.

4,499,524

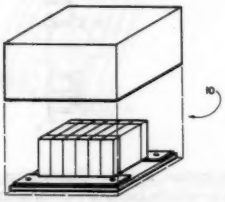
HIGH VALUE SURFACE MOUNTED CAPACITOR

Lewis J. Shioleno, Milwaukee, Wis., assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 7, 1983, Ser. No. 549,112

Int. Cl.³ H05K *7/06*

U.S. Cl. 361—404 **2 Claims**



1. A modular capacitor system comprising:

a substrate;

at least two conductive termination footprints on said substrate;

at least two ceramic capacitors being electrically connected to each other and to said substrate such that the end terminations of said capacitors are in conductive contact with said conductive termination footprints on said substrate;

a five-sided housing of general hexahedral shape; said substrate having said capacitors connected thereto being inserted into said housing such that the base of said substrate forms the sixth side of the hexahedral housing; and

a plurality of termination pads at the base of said housing in electrical contact with said termination footprints.

4,499,525

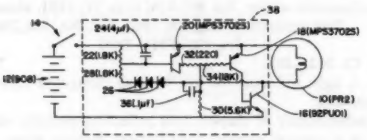
CONSTANT ILLUMINATION FLASHLIGHT

Henry R. Mallory, Greenwich, Conn., assignor to Duracell Inc., Bethel, Conn.

Filed Dec. 16, 1981, Ser. No. 331,432

Int. Cl.³ F21V *23/00*

U.S. Cl. 362—157 **2 Claims**



1. A portable flashlight designed to provide a relatively constant illumination output over the useful service life of the battery power supply therefor, despite a relatively poor battery maintenance characteristic during discharge, comprising an incandescent lamp for providing illumination, a circuit for providing relatively constant electrical power to the incandescent lamp over substantially the entire useful life of at least one power supply battery, having a relatively poor voltage maintenance characteristic during discharge, said circuit including a drive transistor having the incandescent lamp coupled in series with the emitter and collector of the drive transistor and further coupled in series with said battery power supply, said circuit further including a control circuit including first and second control transistors coupled in a complementary manner such that only one control transistor is conducting at a time, said first control transistor being coupled to the base of said drive transistor, to drive it into a saturated conductive mode when said first control transistor is conducting, and said second control transistor being an inhibit transistor having a drive output thereof coupled to the base of said first control transistor to turn it off when said inhibit transistor is conducting, wherein said control circuit causes said drive transistor to generate a current pulse train in which the duty cycle thereof is increased, by providing current pulses having a greater pulse width to compensate for a lesser pulse amplitude, as the voltage from the power supply declines during its discharge to provide relatively constant electrical power to the incandescent lamp over substantially the entire useful life of the battery power supply, wherein said drive transistor has a relatively high beta characteristic and is driven by said control circuit in a non-dissipative manner in substantially either a fully conductive state or a fully non-conductive state to produce the pulse train, whereby power dissipation in the drive transistor during partially conductive modes is substantially eliminated, and wherein an RC timing network is coupled to the base of said inhibit transistor for controlling the frequency of the pulse train generated by the circuit.

4,499,526

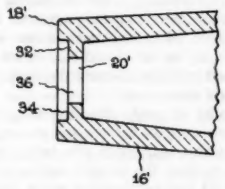
LAMP UNIT HAVING GLASS REFLECTOR MEMBER WITH RECESSED BASE END

Denes Tarnay, Cleveland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 25, 1983, Ser. No. 526,301

Int. Cl.³ F21V *7/00*

U.S. Cl. 362—263 **7 Claims**



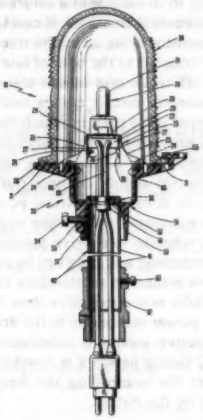
1. A lamp unit which includes a molded glass reflector member terminating at its base in an elongated hollow cavity protruding from the rear side of said reflector member, said cavity having a recessed opening of smaller size at the rearmost end formed by spaced apart shoulders extending from the inner walls of said cavity when the lamp components are assembled together which provides a recessed engagement surface for mounting said lamp, and a tungsten halogen lamp secured in said hollow cavity so that its light source is positioned at the focal point of said reflector member with the lamp inleads projecting through said recessed opening.

4,499,527

AIRPORT RUNWAY/TAXIWAY EDGE LIGHT FIXTURE

Richard J. Tauber, Simsbury, and Daniel J. Rosborg, Bristol, both of Conn., assignors to Cooper Industries, Inc., Houston, Tex.

Filed May 27, 1983, Ser. No. 498,637
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 28 Claims



1. An airport light fixture for mounting on a substantially cylindrical support column, comprising:

lamp means for providing illumination;

an optical globe for covering said lamp means and for directing the light emanating therefrom; and

a base member for securely mounting said globe and said lamp means in an adjustable, substantially upright position on said support column, said globe being releasably securable to said base member and substantially sealed over said lamp means for protecting said lamp means, said base member including, at its bottom, a mounting hub for mounting said base member on the upper end of said support column, said mounting hub including:

(a) a substantially annular planar support surface positioned on said upper end of said support column when said base member is mounted thereon;

(b) substantially cylindrical collar means depending downwardly from said planar support surface and having a plurality of leveling screws extending transversely therethrough for contacting the peripheral surface of said support column when said base member is mounted thereon for adjusting the tilt of said base member, as necessary, to obtain and securely maintain the desired vertical positioning of said globe; and

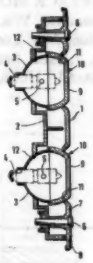
(c) a plurality of guide ribs depending downwardly from said planar support surface and situated interiorly of said collar means, said guide ribs being spaced around said support surface, the interior surface of each of said ribs facing said support column when said base member is mounted thereon being equivalently tapered such that an imaginary surface passing through each of said individual surfaces is frusto-conically shaped, having its smaller diameter end adjacent said planar support surface, said smaller diameter being substantially equal to the outer diameter of said upper end of said support column for guiding said planar support surface of said mounting hub to the desired position above said upper end during mounting of said base member on said support column, the taper and positioning of each of said guide ribs, and the positioning of said collar means and said leveling screws, being selected to permit adjustment of the tilt of said support member at any point on the circumference of said support column, as necessary, to obtain said desired vertical positioning of said globe.

4,499,528

INTERIOR LIGHT ASSEMBLY FOR A VEHICLE

Christian Hawlitzki, Pulheim, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 19, 1983, Ser. No. 533,482
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247449
Int. Cl.³ F21V *3/00*
U.S. Cl. 362—275 5 Claims



1. A combination interior illumination and reading lamp assembly for a vehicle enclosure comprising:

means providing a structural support housing for the assembly;

lamp means for providing visible radiation;

means surrounding a portion of said lamp means for reflecting a portion of said visible radiation in a predetermined direction;

means surrounding second portion of said lamp means and being connected to said reflector means for directing said visible radiation in a plurality of predetermined directions; and

means defining a diffusing lens element mounted on said housing means and surrounding said directing means;

wherein said directing means comprises a focusing lens positioned opposite said reflector means for directing a portion of said visible radiation in a beam away from said housing and a transmittance portion for allowing the remaining of said radiation to be transmitted towards said diffusing lens means and said directing means is movable, within said assembly to allow free selection of the direction of said beam.

4,499,529

LIGHT REFLECTOR

Luisito A. Figueroa, 2275 Taft Ave., Malate, Manila, Philippines

Continuation of Ser. No. 265,828, May 21, 1981, abandoned. This application Aug. 24, 1983, Ser. No. 526,216
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—283 7 Claims

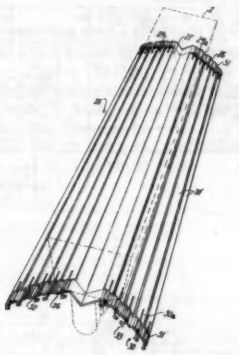
1. A light reflector for use with an elongated light source comprising:

a substantially M shaped light reflecting element extending in a coaxial parallel longitudinal fashion along a light source, the element having a central V section and at least two wing sections centrally positioned about said central V section;

said central V section includes two opposing tangent light reflecting planar surfaces fixedly joined together to create a V configuration with a centrally positioned apex, said apex being approximately two millimeters above the horizontal axis leading edge of said light source, and said opposing tangent light reflecting planar surfaces being

positioned at approximately 33 degrees relative to the horizontal whereby all light rays emitted from said light source impinge on said V section planar surfaces and are reflected away from said light source to prevent light source illumination losses generated by light source interference with reflected light rays; and

said two wing sections are symetrically positioned on either side of said V section so as to create said M shape configuration with each wing section having at least five individu-



ally dimensioned and oriented light reflective angled planar surfaces with widths in the range of 10 to 20 millimeters, said light reflective angled planar surfaces being inclined at angles in the range of 16 to 40 degrees relative to the horizontal, said wing section surfaces being positioned such that the widest are adjacent to said V section while the narrowest surfaces form the farthest portion of said wing sections from said V section whereby light rays emitted from said light source illuminate a predetermined area in a substantially glare-free manner.

4,499,530

SWITCHING POWER SUPPLY APPARATUS

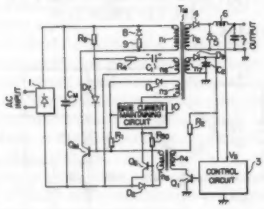
Kenichi Onda; Kojin Abe; Kohei Yabuno, all of Hitachi, and Takeshi Uemura, Niigata, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,369

Claims priority, application Japan, Sep. 30, 1981, 56-153634; Mar. 30, 1982, 57-52546

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—17 **12 Claims**



1. A switching power supply apparatus comprising a main semiconductor device having a control electrode and a semiconductor device drive circuit, a first main electrode of said main semiconductor device being connected to one electrode of a DC power source via a primary winding of a main transformer, a second main electrode of said main semiconductor device being connected to the other electrode of said DC power source, said control electrode of said main semiconductor device being connected to said second main electrode via a secondary winding of a semiconductor device drive transformer, a drive current from said semiconductor device drive circuit being fed to said main semiconductor device via a primary winding of said semiconductor device drive transformer, said main semiconductor device being turned on or off according to feeding or interruption of said drive current for producing an output on a secondary winding of said main transformer;

a first diode inserted between one end of said secondary winding of said semiconductor device drive transformer and said second main electrode of said main semiconductor device;

a tertiary winding provided on said main transformer having one end coupled to said control electrode of said main semiconductor device via a second diode and the other end coupled to an anode of said first diode via an auxiliary semiconductor device having a control electrode; and

a connecting means for coupling said control electrode of said auxiliary semiconductor device to a cathode of said first diode.

8. A switching power supply apparatus comprising:

a first capacitor and a second capacitor connected in series between both electrodes of a DC power source;

a first main semiconductor device having a control electrode and a second main semiconductor device having a control electrode, connected in series between said both electrodes of said DC power source;

a primary winding of a main transformer connected between a point for coupling said first capacitor to said second capacitor and another point for coupling said first main semiconductor device having a control electrode to said second main semiconductor device having a control electrode;

a first semiconductor device drive transformer having a secondary winding coupled between a control electrode of said first main semiconductor device and one main electrode thereof and having a primary winding connected to a semiconductor device drive circuit;

a second semiconductor device drive transformer having a secondary winding coupled between a control electrode of said second main semiconductor device and one main electrode thereof and having a primary winding connected to said semiconductor device drive circuit;

a secondary winding of said main transformer for obtaining the output according to turning on and turning off of said first and second main semiconductor devices; characterized by the provision of

a first diode inserted between one end of said secondary winding of said first semiconductor device drive transformer and said one main electrode of said first main semiconductor device;

another first diode inserted between one end of said secondary winding of said second semiconductor device drive transformer and said one main electrode of said second main semiconductor device;

a tertiary winding provided on said main transformer, having one end connected to said control electrode of said first main semiconductor device via a second diode and having the other end connected to an anode of said first diode via an auxiliary semiconductor device with a control electrode;

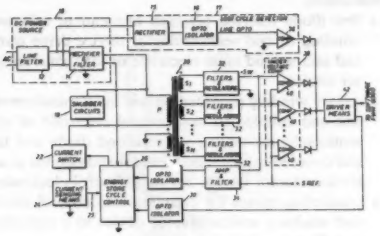
another tertiary winding provided on said main transformer, having one end connected to said control electrode of said second main semiconductor device via another second diode and having the other end connected to an anode of said first diode via another auxiliary semiconductor device with a control electrode;

connecting means respectively for connecting said respective control electrodes of said auxiliary semiconductor devices to said respective cathode of said first diodes.

4,499,531
POWER CONVERTER

William E. Bray, Houston, Tex., assignor to 501 Gateway Technology, Inc., Houston, Tex.

Filed Nov. 3, 1982, Ser. No. 438,794
Int. Cl.³ H02M 3/335
U.S. Cl. 363—19 11 Claims



1. A self-referencing self-oscillating power converter which operates in the flyback switch mode through a power transformer for converting an input DC power source to voltage regulated output power supply votages applied to a load, where energy is stored in a primary winding of the power ansformer during energy store-cycles by causing a current to flow in the primary winding, and where the stored energy is delivered from secondary windings of the transformer to the load during an energy transfer cycle, the converter comprising:

(a) a current switch for switching the primary winding current on and off, said switch including a proportional base drive current transformer connected to said switch with its primary winding conducting the primary current of said power transformer and its secondary winding providing base drive current to said switch in response to said current transformer primary current, the turns ratio of said voltage transformer determining a minimum saturation current gain for said switch;

(b) a means for electrically sensing at low voltage potentials the primary winding current, said sensing means generating a primary current level signal in response to the primary current;

(c) a voltage sensing means for sensing one of the output regulated voltages, said voltage sensing means generating a secondary voltage level signal in response to the level of said sensed output voltage; and

(d) an energy store-cycle control means including means for electrically summing said primary current level signal and said secondary voltage level signal to obtain a switch control signal, said energy store-cycle control means responding to said switch control signal to control the duration of each energy store-cycle thereby to deliver power to the load at regulated supply voltages.

4,499,532
FLOATING BATTERY FEED CIRCUIT

Robert C. Hudson, Woodridge; William F. MacPherson, Wheaton, and Charles H. Sharpless, Wayne, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.Y.

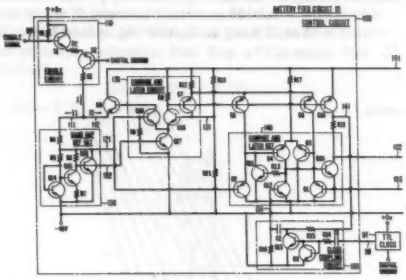
Filed Mar. 23, 1983, Ser. No. 477,985
Int. Cl.³ H02M 3/335
U.S. Cl. 363—21 12 Claims

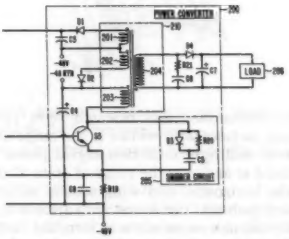
1. A battery feed circuit for supplying power from a source of potential to an electrical load comprising

transformer means comprising first winding means, second winding means magnetically coupled to said first winding means and connectible to said load and third winding means magnetically coupled to said first winding means,

energizing means comprising energy storage means connected to said third winding means for storing energy to develop a voltage,

control signal generator means responsive to said voltage for generating control signals only after said voltage exceeds a first predetermined magnitude and





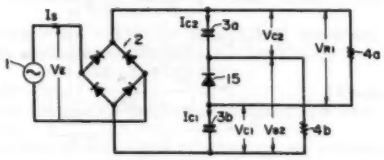
switching means responsive to said control signals for selectively connecting said source of potential to said first winding means,

wherein said control signal generator means further comprises means for terminating the generation of said control signals by said control signal generator means when said voltage is below a second predetermined magnitude.

4,499,533
POWER SUPPLY APPARATUS

Futoshi Okamoto, Hirakata, Japan, assignor to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Mar. 2, 1983, Ser. No. 471,525
Claims priority, application Japan, Sep. 14, 1982, 57-159938
Int. Cl.³ H02N 7/06
U.S. Cl. 363—126 9 Claims



1. A power supply apparatus, comprising:

an alternating current voltage source (1),

rectifying means (2) coupled to the output of said alternating current voltage source for rectifying an alternating current voltage obtained therefrom,

a series connection including a first smoothing capacitor (3*a*), a diode (15), and a second smoothing capacitor (3*b*) being connected to said rectifying means such that the

rectifying direction of said diode may be opposite to the rectifying direction of said rectifying means, a first load (4*a*) being connected in parallel with the series connection portion including said first smoothing capacitor and said diode, and

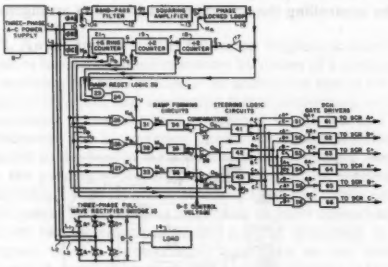
a second load (4*b*) being connected in parallel with the series connection portion including said second smoothing capacitor and said diode.

4,499,534

CONTROL SYSTEM FOR CONTROLLING AN SCR NETWORK TO REGULATE THREE-PHASE A-C POWER FLOW

Harold R. Schnetzka, Spring Grove; Frank E. Wills, and Dean K. Norbeck, both of York, all of Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 12, 1982, Ser. No. 434,018
Int. Cl.³ H02P *13/24*
U.S. Cl. 363—129 **8 Claims**



1. A control system for controlling the conduction angles of three pairs of SCR's, to each of which pairs is applied a respective assigned one of the three alternating sinusoidal phase voltages of a three-phase A-C power supply, in order to regulate the power flow from the power supply to a load circuit, comprising:

a transformer for deriving the corresponding line-to-neutral voltage for a predetermined one of the alternating phase voltages;

a band-pass filter for attenuating, in the derived line-to-neutral voltage, frequencies above and below the voltage's fundamental frequency, while at the same time introducing no phase shift to that fundamental frequency, the output signal from the band-pass filter thereby being sinusoidal shaped and identical to the predetermined phase voltage except that any harmonics, noise, transients or other distortions in the phase voltage are not present in the filter's output signal;

means for effectively detecting the zero voltage crossings in the filter's sinusoidal output signal and producing a square wave signal which constitutes a reference voltage waveform having the same frequency as said phase voltages and having amplitude excursions which are precisely synchronized to the zero voltage crossings of the predetermined phase voltage;

means for developing, from said reference voltage waveform, three phase-displaced square wave signals which are phase-displaced with respect to each other by 120° and have the same frequency as said phase voltages, each of the three phase-displaced square wave signals having its amplitude excursions occurring in exact time coincidence with the zero voltage crossings of a respective one of the three line-to-neutral voltages for the three phase voltages;

means responsive to the three phase-displaced square wave signals for developing three phase-displaced, ramp-shaped analog signals each of which corresponds to and is in phase with a respective associated one of the three square wave signals, each ramp-shaped analog signal having a linearly changing ramp-shaped pulse during each half cycle of its associated square wave signal;

means for supplying a d-c analog control voltage representing a desired power flow to the load circuit;

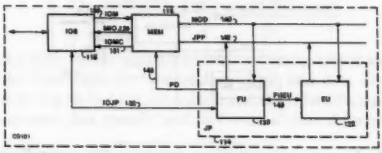
and means for comparing said d-c control voltage to each of the three ramp-shaped analog signals and for producing, from the comparisons, gating signals for triggering the six SCR's into conduction at the angles necessary to delivery the desired power flow to the load circuit.

4,499,535

DIGITAL COMPUTER SYSTEM HAVING DESCRIPTORS FOR VARIABLE LENGTH ADDRESSING FOR A PLURALITY OF INSTRUCTION DIALECTS

Brett L. Bachman, Boston, Mass.; Richard A. Belgard, Saratoga, Calif.; David H. Bernstein, Ashland; Richard G. Bratt, Wayland, both of Mass.; Gerald F. Clancy, Saratoga, Calif.; Edward S. Gavrin, Lincoln, Mass.; Ronald H. Gruner, Cary, N.C.; Thomas M. Jones, Chapel Hill, N.C.; Craig J. Mundie; James T. Nealon, both of Cary, N.C.; John F. Pilat, Raleigh, N.C.; Stephen I. Schleimer, Chapel Hill, N.C., and Steven J. Wallach, Saratoga, Calif., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,427
Int. Cl.³ G06F *9/34, 7/04*
U.S. Cl. 364—200 **10 Claims**



1. A digital computer system (CS **101**) including

processor means (JP **114**) for performing operations on operands;

memory means (**112**) for storing the operands and instructions for directing the operations;

bus means (MOD **140**, JPD **142**) for conducting the instructions and the operands between the memory means and the processor means, and;

I/O means (IOS **116**) for conducting the operands in either direction between the digital computer system and devices external thereto;

the processor means including:

addressing means (DESCRIPTOR PROCESSOR **715**) connected to the bus means for providing to the memory means addresses used for controlling transfer of said operands and instructions between the memory means and the processor means, the addressing means including means for receiving and translating descriptors, each said descriptor comprising:

an object field for identifying a certain object, an object being a block of contiguous storage of variable length,

an offset field for specifying how many bits into the said object a certain operand or instruction begins, and

a length field for specifying the number of contiguous bits comprising said certain operand or instruction, and;

microcode control means (**10236**) responsive to the instructions, the microcode control means including:

microcode storage means (uCCS **10238**, FIGS. **102** & **110**) for storing sequences of microinstructions for controlling the processor means, having at least one sequence of microinstructions corresponding to each instruction from each dialect of a plurality of dialects, and

microcode fetch means (uPC **20276**) responsive to in-

structions in conjunction with a dialect code to retrieve from the microcode storage means the corresponding sequence of microinstructions and to provide said sequence of microinstructions to the processor means.

4,499,536

SIGNAL TRANSFER TIMING CONTROL USING STORED DATA RELATING TO OPERATING SPEEDS OF MEMORY AND PROCESSOR

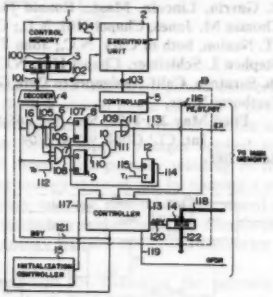
Kazutoshi Gemma, Ebina, and Michiyasu Ishibashi, Hadano, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 329,048

Claims priority, application Japan, Dec. 17, 1980, 55-177290

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **14 Claims**



1. A memory controlling apparatus for controlling signal transfer between a memory for storing data and a processor for processing the data accessed to said memory, comprising:

means for retaining time information based on the operating speed of at least said memory and said processor, including means for receiving from said processor and storing respective data relating to the operating speed of said processor and the operating speed of said memory; and

control means for controlling the timing of signal transfer between said processor and said memory based on at least said time information of said retaining means, including first means responsive to said processor for transmitting a memory access signal to said memory and second means connected to said receiving and storing means and responsive to said access signal for transmitting to said memory a signal to command said memory to transmit data to said processor at a time subsequent to transmission of said memory access signal which is determined by said data relating to the operating speed of said memory and said processor as stored in said receiving and storing means.

4,499,537

APPARATUS FOR RAPID EXECUTION OF INTERRUPTS AFTER THE RECOGNITION OF AN INTERRUPT REQUEST

Alfred Eckert; Ernst Heilmeir, and Klaus Hempen, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,436

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138961

Int. Cl.³ G06F *9/46*

U.S. Cl. 364—200 **4 Claims**

1. A circuit arrangement for the rapid execution of interrupts after recognition of interrupt requests in a proccessor which comprises a control unit, control lines and a but connected to said control unit and an external program memory connected to said bus and storing an external program and in which instructions for executing and processing interrupts are inserted between instructions for working off a program, in which the inserted instructions are addressed with a plurality of instruction indicators which work in parallel and which are addressable in parallel, and in which the instruction indicators are addressed, on the one hand, by a program and, on the other hand, by recognition of interrupt requests, comprising:

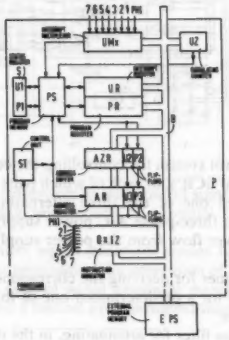
an interrupt multiplexer connected to said bus and including inputs for receiving interrupt requests;

a circulating counter connected to said bus and operable to form addresses of said inputs and search said interrupt multiplexer for set interrupt requests;

a multilevel interrupt register connected to said bus for storing interrupt requests under specific address as U-bits in a level determined by the address;

a program register connected to said bus for storing and erasing P-bits in response to instructions of the external program in said external program memory;

a program memory connected to said program register and to said interrupt register and storing an internal program for controlling the operation of said circuit arrangement;



status register means connected to said control unit, to said circulating counter and to said program memory and operable to indicate the operational states of the search operation;

means connected to said status register means and including said circulating counter, said interrupt register and said program register, operable to search for set U-bits and P-bits as a function of the states of said status register means;

an address buffer connected to said bus and operable to store circulating counter addresses in response to the finding of U-bits and P-bits;

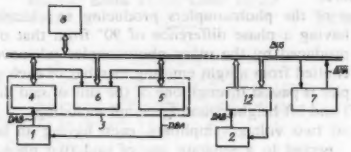
an address register connected to said address buffer for storing the address stored in the address buffer at the end of each instruction worked off by said processor; and

instruction indicator means connected to said bus and to said address register for providing parallel instruction indicators to said external program memory in response to the current address in said address register.

4,499,538
ACCESS ARBITRATION SYSTEM TO SEVERAL PROCESSORS OR MICROPROCESSORS WITH A COMMON BUS

Ulrich Finger, 30, rue du Moulin de Pierre, 92140 Clamart; Pierre Desprez, 50, Ave. A. Briand, 92220 Bagneux, and Pierre Ligneres, 80 bis, Rue des Mures, 92160 Antony, all of France

Filed Sep. 3, 1982, Ser. No. 414,591
Claims priority, application France, Sep. 24, 1981, 81 18014
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 9 Claims



1. An arbitration system for access requests to several processors having common resources by means of a common bus, comprising for each processor an arbitration means for access request conflicts, said arbitration means comprising: means for processing access requests connected to the bus and to the processor; and a resolution circuit for access priorities connected to the bus, to the access request processing means and to the processor, for allocating to the access requests fixed priorities, cyclic priorities or mixed fixed and cyclic priorities; said means for processing the access requests comprising a bus access request circuit receiving a signal indicating an access request of the corresponding processor to the arbitration means in question, as well as a signal indicating whether the other processors have made an access request; and a circuit for transmitting a signal representing the access request arbitration verdict of the corresponding processor, as a function of the priorities of the other access requests; said request and verdict transmission circuits being connected to the bus, to the processor and to the priority resolution circuit.

4,499,539
METHOD AND APPARATUS FOR LIMITING ALLOCATED DATA-STORAGE SPACE IN A DATA-STORAGE UNIT

Robert H. Vosacek, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,894
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 10 Claims

7. For use in a data-storage hierachy having a backing store coupled to a front store, each store having a plurality of addressable data-storage spaces, said hierarchy being adapted to be coupled to a host processor for transferring data signals therewith, means for coupling the host processor and said front and back stores together for transferring data signals therebetween;

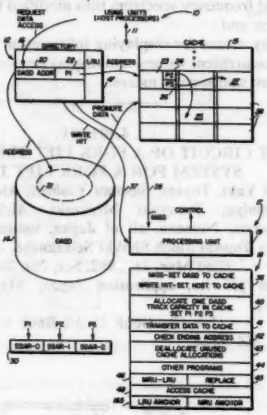
the improvement including in combination;

means for indicating that data is to be written into said front store;

allocation means coupled to said indicating means for allocating a plurality of allocatable sets of said addressable data-storage spaces in said front store for said data indicated to be written therein, said allocation means also having means indicating that the allocatable unit of said backing store has a given multiple of data-storage spaces equal to the storage capacity of a given number of data-storage spaces in each set of data-storage spaces of said front store;

means coupled and being responsive to said allocation means for allocating said sets of addressable data-storage spaces and to activate said coupling means to transfer said indicated data into said front store for storage in said allocated sets;

examining means coupled to said front store for examining said allocated sets of data-storage spaces for determining which of said allocated data-storage spaces in fact received data signals during said indicated data transfer; and

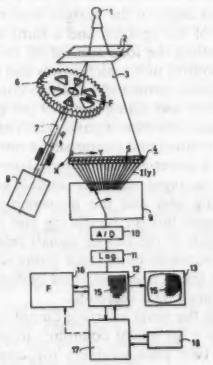


deallocation means coupled to said examining means and to said front store for deallocating all of said data storage paces that in fact did not receive and store data during said indicated data transfer and that were allocated therefor.

4,499,540
DEVICE FOR THE TESTING OF BODIES COMPRISING PERIODIC STRUCTURES

Günter Kowalski, Pinneberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1982, Ser. No. 362,019
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112758
Int. Cl.³ G01N *23/00*
U.S. Cl. 364—414 7 Claims



1. A device for testing a body having a periodic structure comprising:

image forming means for scanning a body structure and supplying measurement values, said image forming means including an array of separate detectors producing electric signals representative of said measurement values,

electronic means for processing said measurement values,

said electronic means including Fourier transformation means for forming a frequency spectrum of neighboring measurement values in a direction of said periodic structure, first means for suppressing fundamental and higher harmonics (G,B_1,B_3) of said periodic structure in said frequency spectrum, and second means for retransforming said frequency spectrum thus modified into a spatial structure; and

display means for displaying information derived from said measurement values, said display device receiving a signal from said second means.

4,499,541

INPUT CIRCUIT OF A FORK LIFT TRUCK CONTROL SYSTEM FOR A FORK LIFT TRUCK

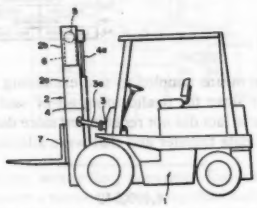
Katsumi Yuki, Toyota; Susumu Yoshida, Aichi; Mineo Ozeki, Ichinomiya; Yasuyuki Miyazaki, Aichi, and Masaru Kawamata, Numazu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho, Japan

Filed Mar. 31, 1982, Ser. No. 364,401

Claims priority, application Japan, Mar. 31, 1981, 56-45958[U]

Int. Cl.³ G06F *15/50*; B66F *9/06*

U.S. Cl. 364—424 **7 Claims**



3. A forklift truck control system for a fork lift truck including:

(A) a sensing unit including a first sensor for detecting optically and signalling electrically a lifting height of a fork located on a front side of the fork lift truck vertically movable with respect to an upright from a lowest position thereof, a second sensor for detecting and signalling a tilting angle of the upright with respect to a neutral position of the upright, and a third sensor for detecting and signalling the load applied on the fork;

(B) a control unit which stores and produces various predetermined command signals to control the lifting height of the fork and tilting angle of the upright according to the various detection signals received from said sensing unit, said control unit comprising a microcomputer main frame which stores and outputs predetermined command signals and an input interface circuit connected between said sensing unit and the microcomputer main frame via a common bus for producing and inputting the data based on each of the output signals from said sensing unit into the microcomputer main frame when the microcomputer main frame issues an input command to input one of the produced data thereinto,

wherein the input interface circuit of said control unit comprises a lift height counting circuit, connected to each of said two photocouplers for counting incrementally or decrementally the length of chain passed through the chain wheel based on output electrical signals converted by said two photocouplers,

(C) a driving unit, responsive to one of the predetermined command signals from said control unit, which drives a tilt cylinder for tilting the upright backward to an angle corresponding to the predetermined command signal and which drives a lift cylinder for lifting and lowering the fork according to the predetermined command signal so as to change the lifting height of the fork to a target height,

(D) said first sensor comprising a disc through which a plurality of slits are penetrated along the radial direction thereof and two photocouplers are provided across said disc,

(E) said disc attached coaxially on a chain wheel which is attached to an inner mast of the upright and to a top end of a piston of the lift cylinder and rotating as a chain engaged with the chain wheel moves according to the movement of the piston of the lift cylinder, one end of the chain attached to an outer mast of the upright and the other end thereof linked with the fork,

one of the photocouplers producing an electrical signal having a phase difference of 90° from that of a signal produced by the other photocoupler whenever a light emitted from a light emitting member of each photocoupler is passed through one of the slits of said disc,

(F) said lift height counting circuit including:

(a) two voltage amplifiers, each having an input connected to a separate one of said two photocouplers, each of said amplifiers amplifying the electrical signal received from the corresponding photocoupler and producing an output signal on an output terminal thereof;

(b) two waveform shapers, each having an input connected to the output of a separate one of said two amplifiers, each of said shapers shaping the waveform of the output signal from the corresponding amplifier into a rectangular wave;

(c) a first differentiator, connected to an output of one of said two waveform shapers, for differentiating each falling edge of the rectangular wave fed from the corresponding waveform shaper;

(d) a second differentiator, connected to said output of said waveform shaper in parallel with said first differentiator, for differentiating each rising edge of the rectangular wave fed from the corresponding waveform shaper;

(e) a first inverter, connected to an output of said first differentiator, for inverting the logical level thereof;

(f) a second inverter, connected to an output of the other waveform shaper which inverts the logical level thereof;

(g) four AND gate circuits, a first AND gate circuit having inputs connected to an output of said second differentiator and to an input terminal of said second inverter, a second AND gate circuit having inputs connected to an output terminal of said first inverter and to an output terminal of said second inverter, a third AND gate circuit having inputs connected to said output of said first inverter and to the input terminal of said second inverter, and a fourth AND gate circuit having inputs connected to the output of said second differentiator and to the output terminal of said second inverter;

(h) a first NOR gate having inputs connected to outputs of said first and second AND gate circuits;

(i) a second NOR gate circuit having inputs connected to outputs of said third and fourth AND gate circuits;

(j) a fifth AND gate circuit having inputs connected to outputs of said first and second NOR gate circuits; and

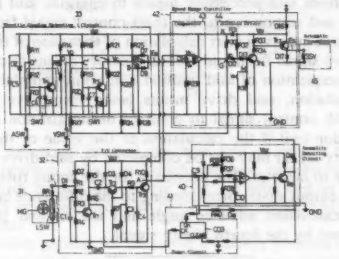
(k) an UP/DOWN counter, a clock terminal of which is connected to an output of said fifth AND gate circuit, an UP terminal of which is connected to the output of said second NOR gate circuit, and a DOWN terminal of which is connected to the output of said first NOR gate circuit, for counting incrementally the number of output pulses from said fifth AND gate circuit when an output pulse signal from said second NOR gate circuit is received at the UP terminal thereof, for counting decrementally the number of output pulses from said fifth AND gate circuit when an output pulse signal from said first NOR gate circuit is received at the DOWN terminal thereof, and including a reset terminal for resetting

the counter to zero when the fork is placed at the lowest position.

4,499,542
AUTOMATIC TRANSMISSION CONTROL SYSTEM WITH RESET

Shigemitsu Hamajima, Oobu; Tomoaki Nishimura, Toyota; Naoji Sakakibara, Chiryu, and Shoji Kawata, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 14, 1982, Ser. No. 368,476
Claims priority, application Japan, Apr. 20, 1981, 56-59601
Int. Cl.³ B60K *41/08*; G06F *15/20*
U.S. Cl. 364—424.1 **8 Claims**



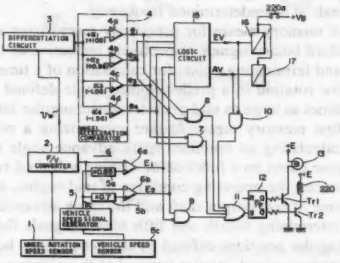
1. An automatic transmission control system comprising:
vehicle speed responsive signal generating means for generating a vehicle speed responsive signal which changes its level at a frequency corresponding to vehicle speed;
vehicle speed signal processing means for processing said vehicle speed responsive signal and issuing a vehicle speed signal representing the vehicle speed;
means for generating an engine power indexing signal representing engine power;
a speed range controller for determining the speed range of an automatic transmission in accordance with speed range reference signals including said engine power indexing signal and vehicle speed signal as well as in accordance with detection of anomalies;
anomaly detecting means for detecting anomalies in said speed range reference signals applied to said speed range controller and outputting an anomaly detection signal to said speed range controller; and
reset means for counting the number of level changes in said vehicle speed responsive signal and releasing the anomaly detecting state of said anomaly detecting means when the counted value reaches a predetermined value.

5. An automatic transmission control system comprising:
vehicle speed responsive signal generating means for generating a vehicle speed responsive signal which changes its level at a frequency corresponding to vehicle speed;
vehicle speed signal processing means for processing said vehicle speed responsive signal for detecting vehicle speed;
means for generating an engine power indexing signal representing engine power; and
a microprocessor for determining the speed range of an automatic transmission in accordance with the engine power index and vehicle speed, detecting an anomalous change in said vehicle speed, setting said automatic transmission at a safety speed range in the presence of the anomalous change, and then counting the level changes in said vehicle speed responsive signal for setting said automatic transmission at a speed range in accordance with said engine power index and vehicle speed after the counted value reaches a predetermined value.

4,499,543
ANTI-SKID BRAKE CONTROL SYSTEM WITH FAIL-SAFE ARRANGEMENT

Toshiro Matsuda, Zama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 24, 1982, Ser. No. 423,187
Claims priority, application Japan, Sep. 28, 1981, 56-152164
Int. Cl.³ B60T *8/00*
U.S. Cl. 364—426 **14 Claims**



1. An anti-skid brake control system for an automotive vehicle, comprising:
a detector associated with a wheel of said vehicle for detecting acceleration of said wheel and for producing an acceleration indicative signal having a value indicative of said detected wheel acceleration;
a reference signal generator for producing a plurality of reference signals, each differing in value from any of the other reference signals of said plurality of reference signals, and each representing a threshold value to be compared with the value of said acceleration indicative signal;
a comparator for respectively comparing the value of said acceleration indicative signal with the value of each of said plurality of reference signals and for producing a comparator signal which is a discrete combination of a plurality of outputs, each of said outputs resulting from a corresponding one of said respective comparisons;
a control signal generator responsive to said comparator signal for producing a control signal for controlling braking operation, said control signal having a value derived on the basis of the combination of said outputs; and
a fault detector responsive to said comparator signal for detecting whether said combination of outputs is a member of a predetermined set all possible combinations occurring in a non-malfunctioning control system, and for producing a fault signal whenever said combination of outputs constituting said comparator signal is detected not to be a member of said set, said fault signal being useable to demand a predetermined back-up operation.

4,499,544
ELECTRONIC IGNITION CONTROL APPARATUS

Masahiro Ohba, Toyohashi; Kenzo Ito, Okazaki; Susumu Akiyama, Kariya; Yuuji Hirabayashi, Aichi; Satoshi Hirano, Kariya, and Naoto Ooka, Gamagori, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 199,234, Oct. 21, 1980, Pat. No. 4,360,874. This application Aug. 25, 1982, Ser. No. 411,362
Claims priority, application Japan, Oct. 22, 1979, 54-136216
The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.
Int. Cl.³ F02P *5/04, 3/02*; G05B *15/02*
U.S. Cl. 364—431.04 **8 Claims**

4. An electronic ignition control apparatus for an internal combustion engine having an output shaft rotated by a piston, an ignition coil adapted to generate a spark voltage upon deenergization thereof and a spark plug activated by the spark voltage to ignite the air-fuel mixture metered into a combustion

chamber of said engine so as to operate said piston, the ignition control apparatus comprising:

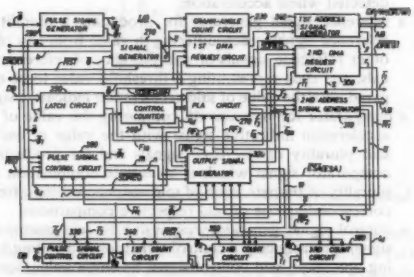
first detecting means for producing a reference signal indicative of a reference angular position of said output shaft;

second detecting means for producing a series of electric angular signals respectively at a predetermined angular interval of said output shaft related to the reference signal;

third detecting means for producing a first binary signal indicative of the operating condition of said engine;

a pulse signal generator for producing a series of pulse signals at a predetermined frequency;

first memory means for previously memorizing second and third binary signals respectively indicative of the starting and terminating points for calculation of a time necessary for rotation of a predetermined angle defined by integer times as large as said predetermined angular interval, said first memory means further memorizing a program for calculating an optimum spark advance angle of said engine based on a function describing a desired relationship among the operating condition of said engine, a rotational time of said output shaft and the spark advance angle, for determining fourth and fifth binary signals indicative of angular positions defined by integer times as large as said predetermined angular interval at the advance and retard angle sides of the calculated advance angle respectively, and for calculating a time defined by the difference between the calculated advance angle and the angular position defined by said fourth binary signal;



second memory means for temporarily storing the second and third binary signals from said first memory means and storing the fourth and fifth binary signals and a sixth binary signal indicative of the time defined by the difference between the calculated advance angle and the angular position defined by the fourth binary signal;

control means responsive to the pulse signals from said pulse signal generator and the electric angular signals from said second detecting means for producing a first control signal based on a first logic equation describing a relationship between the second binary signal and the first predetermined number of the pulse signals, for producing a second control signal based on a second logic equation describing a relationship between the third binary signal and the second predetermined number of the pulse signals, for producing a third control signal based on a third logic equation describing a relationship between the fourth binary signal and the third predetermined number of the pusle signals and for producing a fourth control signal based on a fourth logic equation describing a relationship between the fifth binary signal and the fourth predetermined number of the pulse signals;

calculation means responsive to the first control signal to start calculation of number of the pulse signals and responsive to the second control signal to cease the calculation of the number of the pulse signals, said calculation means producing a seventh binary signal indicative of the calculated number of the pulse signals defining the actual rotation time of said output shaft;

processing means for calculating the optimum spark advance angle from the function in dependence upon the first and seventh binary signals such that the fourth and fifth binary signals are determined in relation to the calculated spark advance angle to be stored in said second memory means, said processing means further determining an energization timing of said ignition coil in relation to the calculated advance angle and calculating the difference between the calculated spark advance angle and the angular position defined by the fourth binary signal such that the sixth binary signal is determined in relation to the calculated difference to be stored in said second memory means; and

drive means responsive to the determined energization timing from said processing means to energize said ignition coil and responsive to the third control signal from said control means to start calculation of the value of the sixth binary signal from said second memory means to conduct deenergization of said ignition coil upon completing the calculation, said drive means being responsive to the fourth control signal to conduct deenergization of said ignition coil if the calculation of the value of the sixth binary signal may not be completed by said drive means prior to lapse of time necessary for the actual rotation of said output shaft corresponding to the difference between the calculated advance angle and the angular position defined by the fourth binary signal.

4,499,545

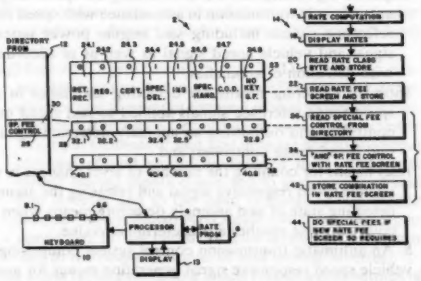
METHOD AND APPARATUS FOR INDIVIDUALIZED SELECTION OF SPECIAL FEE POSTAGE VALUE COMPUTATIONS

Edward P. Daniels, Bridgeport, and Daniel F. Dlugos, Huntington, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 30, 1982, Ser. No. 393,857

Int. Cl.[3] **G06F** *9/36*

U.S. Cl. 364—464 **8 Claims**



1. A method for controlling access to the computation of special fees so as to limit access to selected allowable special fee computations with a postage value computing system having a program operated processor, a rate memory to store postage rate information, a directory memory to store vectors to direct the program in the processor to rate charts and special fee computations to which access is requested by actuations of a keyboard comprising the steps of:

storing in the system a rate fee screen byte representative of special fee computations permitted with a particular mailing class;

recalling a special fee control byte representative of special fee computations as to which access is allowable;

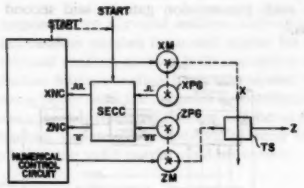
combining the rate fee screen byte with the special fee control byte to form a modified rate fee screen byte; and

computing special fees in accordance with the modified rate fee screen byte.

4,499,546
NUMERICAL CONTROL MACHINE TOOL WITH SLIDING ERROR COMPENSATION FUNCTION

Akihiko Kuga, Iruma, and Hiroo Kuga, Mitaka, both of Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Nagano, Japan

Filed May 10, 1982, Ser. No. 376,983
Claims priority, application Japan, May 19, 1981, 56-74234
Int. Cl.³ G06F *15/46*; G05B *19/18*
U.S. Cl. 364—474 **2 Claims**



1. A numerical control machine tool in which linear or rotary position detectors which produce incremental pulse trains with motion on control axes are provided as position feedback equipment for said control axes, respectively, which comprises:

a position register for detecting a current position on a first axis at all times in response to an output signal from a first-axis position detector;

a compensation data memory in which compensation data for a second axis corresponding to a number of positions on said first axis have been stored in advance, said memory outputting a compensation data corresponding to a position which coincides with a current position specified by said position register;

a pulse generator section for calculating a difference between said compensation data thus outputted and a preceding compensation data outputted by said memory and generating a pulse train the number of pulses of which is proportional to said difference;

a pulse adder for performing one of adding said pulse train obtained for said first axis to a pulse train which is obtained by converting an output signal of a second-axis position detector, and subtracting the former pulse train from the latter pulse train;

a pulse restoring section for converting a pulse train which is provided as a result of calculation by said pulse adder into a signal which is similar in form to the output from said position detector; and

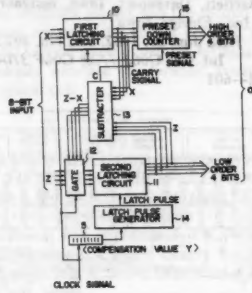
a compensation control section for outputting, as a position feedback signal for said second axis, said signal outputted by said pulse restoring section, and for similarly processing an output signal from said second-axis position detector to be outputted as a position feedback signal for said first axis, to have a sliding error compensation function.

4,499,547
OUTPUT COMPENSATING SYSTEM

Masafumi Inuiya, and Makoto Murakoshi, both of Asaka, Japan, assignors to Fuji Photo Optical Co., Ltd., Kanagawa, Japan

Filed Aug. 13, 1981, Ser. No. 292,400
Claims priority, application Japan, Aug. 19, 1980, 55-113765
Int. Cl.³ H04N *5/21*
U.S. Cl. 364—571 **2 Claims**

2. A system for compensating for variation in an output for each of a plurality of components in which the said output has relatively small variations proportional to the magnitude of inputs, comprising a memory means for storing a compensation value (B) predetermined for each component with reference to a given unit level of output on the basis of the variation among said components, an analog-to-digital conversion means for converting said output into several bits of digital output, means for lowering the order of the value (A) of the high order bits of said digital output to coincide with the order of the value (C) of the lower order bits of said digital output, a subtraction

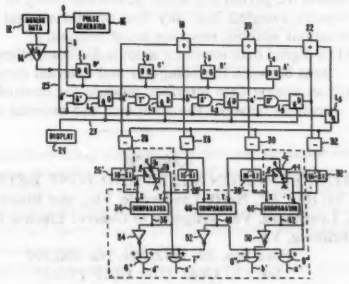


means which subtracts the value (A) of high order bits a number of times, as determined by said compensation value B, from the value (C) of the low order bits, and means for outputting a compensated signal.

4,499,548
DATA COMPRESSION APPARATUS

Richard P. Beebe, Billerica, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 165,169, Jul. 2, 1980, abandoned, and Ser. No. 165,172, Jul. 2, 1980,. This application Oct. 12, 1982, Ser. No. 433,748
Int. Cl.³ H03K *5/20*
U.S. Cl. 364—575 **4 Claims**



1. Apparatus for compressing data represented by samples occurring at a given frequency in such manner that it can be displayed with a minimum of loss of significant detail, comprising

an input means to which said samples representing successive values of data can be applied,

an output means,

means coupled to said input means for deriving a representation of an average of the values represented by each successive group of data samples,

means for providing a signal identifying the data sample of each group having the greatest absolute difference with respect to the average of the data samples of the previous group,

means responsive to said signal for conducting the data sample having the said greatest absolute difference to said output means,

a display means, and

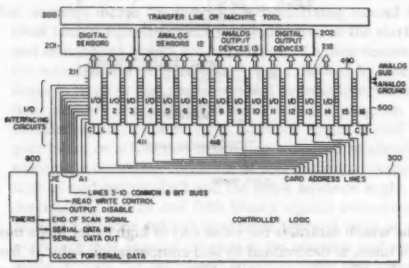
means for coupling said output means to said display means.

4,499,549

DIGITAL COMPUTER HAVING ANALOG SIGNAL CIRCUITRY

Peter G. Bartlett, Davenport, Iowa, assignor to Automation Systems, Inc., Eldrige, Iowa

Filed Jun. 25, 1982, Ser. No. 392,374
Int. Cl.³ G06J *1/00*; G06F *3/04*
U.S. Cl. 364—601 **29 Claims**



1. A hybrid digital and analog computer comprising:

a. a hybrid computer having several interface locations each suitable for insertion of an interface module and each of said interface locations having connections for

(1) common multibit data bus
(2) common anlog signal bus
(3) common read and/or write signal bus
(4) common supply voltage
(5) common ground
(6) card enable address line
(7) multiple external lines for connection to external devices:

b. means for permitting either of the following to be operationally inserted into any one of said several interface locations without rewiring being necessary:

(1) a digital data interface module for controlling connections between the computer and external devices, or
(2) an analog data interface module for controlling connections between the computer and external devices.

4,499,550

WALSH FUNCTION MIXER AND TONE DETECTOR

John M. Ray, III, North Lauderdale, Fla., and Robert J. Martin, Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Sep. 30, 1982, Ser. No. 430,390
Int. Cl.³ G06J *1/00*; G06F *15/332*
U.S. Cl. 364—606 **26 Claims**

1. A mixer stage for multiplying an input signal by the sine and cosine of a reference frequency, comprising:

(a) input means for receiving said input signal;

(b) a first set of transmission gates, each gate having an input means for receiving said input signal, an output, and a control input for receiving a control signal for causing the gate to pass the input signal from the gate input to its output or block the input signal so that it does not pass to the output;

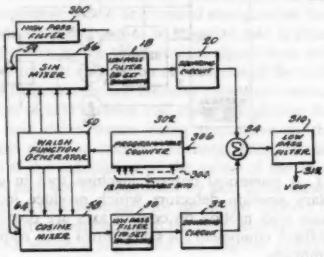
(c) first means associated with said first set of transmission gates for combining the signals at the outputs thereof into a first mixer section output providing a signal defined by the input signal multiplied by the sine of the reference frequency;

(d) first means associated with said first set of transmission gates for weighting the contributions of the signals from each transmission gate to said first combining means;

(e) a second set of transmission gates, each gate having an input means for receiving said input signal, an output and a control input for receiving a control signal for causing the gate to pass the input signal from the gate input to its output or block the input signal so that it does not pass to the output;

(f) second means associated with said second set of transmission gates for combining signals at the outputs thereof into a second mixer section output providing a signal defined by the input signal multiplied by the cosine of the reference frequency;

(g) second means associated with said second set of transmission gates for weighting the contributions of the signals from each transmission gate to said second combining means;



(h) a reference frequency source;

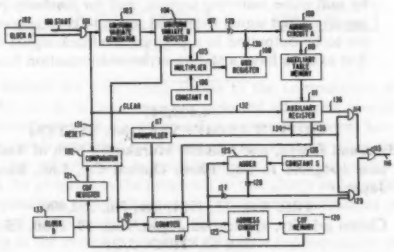
(i) Walsh function generating means, having an input coupled to said reference frequency source, for generating a first set of outputs representing a sine wave synthesis of reference frequency from Walsh function pulse trains, said first set of outputs being coupled to said control inputs of said first set of transmission gates, and for generating a second set of outputs representing a cosine synthesis of said reference frequency from Walsh function pulse trains, said second set of outputs being coupled to said control inputs of said second set of transmission gates.

4,499,551

RAPID GENERATION OF DISCRETE RANDOM VARIATES FROM GENERAL DISTRIBUTIONS

Amalie J. Frank, Chatham Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 27, 1982, Ser. No. 423,856
Int. Cl.³ G06F *7/38*
U.S. Cl. 364—717 **8 Claims**



1. A generator of discrete random variates comprising

a source of random numbers suppliable on demand from a uniformly distributed number set for use in generating addresses;

a first random access memory storing mappings of said addresses into a set of numerical values corresponding to

a preselected discrete probability distribution, each numerical value covering a range of addresses, and coded addresses corresponding to transitional values in said probability distribution;

a second random access memory storing transitional values only of a cumulative distribution function derived from said probability distribution;

means responsive to the address corresponding to a selected random number from said source for accessing said first memory to retrieve a random variate directly, and for accessing said second memory using said coded address; and

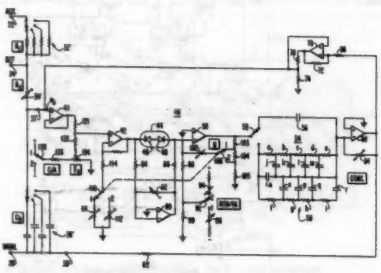
means responsive to a coded address corresponding to a selected random number from said source for comparing said selected random number with successive cumulative distribution function values from said second memory in increasing order until the cumulative distribution function value next higher than said random number is determined, the random variate corresponding to such next highest value being the valid output random variate.

4,499,552

ELECTROCHEMICAL CELL SIMULATING CIRCUIT ARRANGEMENT

Kay K. Kanazawa, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,128
Int. Cl.³ G06G *7/58*
U.S. Cl. 364—802 **14 Claims**



1. An electronic circuit for simulating the electrical characteristics of an electrochemical cell comprising:

a plurality of impedance elements connected in series to partially simulate an electrochemical cell;

simulator circuit means for producing potential and current which define the faradaic resistance of said electrochemical cell;

means for connecting said simulator circuit means across one of said impedance elements;

said simulator circuit means including

electronic impedance simulating circuitry for generating said current; and

electronic current time-processing circuitry connected in series across said one of said impedance elements.

5. An electronic circuit for simulating the electrical characteristics of an electrochemical cell comprising:

a first and a second interconnection terminal;

a first differential amplifier circuit having one input terminal coupled to said first interconnection terminal, having another input terminal and having an output terminal;

a second differential amplifer circuit having a first input terminal, having a second input terminal connected to a point of reference potential and having an output terminal;

a resistance simulator circuit having one terminal connected to said output terminal of said first amplifier circuit and having another terminal coupled to said first input terminal of said second amplifier circuit;

a third amplifier circuit having an input terminal coupled to the output terminal of said second amplifier circuit and having an output terminal;

a first resistor connected between the output terminal of said third amplifier circuit and said first interconnection terminal; and

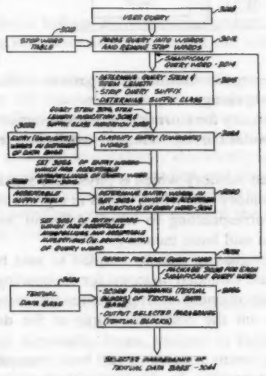
a second resistor connected between the output terminal of said second amplifier circuit and the second interconnection terminal whereby the circuit coupled between said first and said second interconnection terminals is operable to substantially simulate the faradaic resistance of said electrochemical cell.

4,499,553

LOCATING DIGITAL CODED WORDS WHICH ARE BOTH ACCEPTABLE MISSPELLINGS AND ACCEPTABLE INFLECTIONS OF DIGITAL CODED QUERY WORDS

Robert V. Dickinson, 118 Morningside Dr., Westport, Conn. 06880; Louis M. Galie, 4 Black Cherry La., Sandy Hook, Conn. 06482, and Craig A. Snow, 1816 Walnut Ave., Manhattan Beach, Calif. 90266

Filed Sep. 30, 1981, Ser. No. 307,571
Int. Cl.³ G06F *15/40*
U.S. Cl. 364—900 **44 Claims**



1. A method using a digital data processing means for locating from a plurality of digital coded candidate words at least one candidate word which is both an acceptable misspelling and an acceptable inflection of a digital coded query word, the candidate and query words each comprising plural characters, the method comprising the steps of:

determining characters forming a stem portion and an ending portion of such query word;

forming a suffix class indication for any one of a plurality of classes in which the query word may be included;

comparing the characters forming the stem portion with characters starting at the beginning of each of a plurality of such candidate words for finding candidate words having acceptable misspelling matches and those with nonacceptable misspelling matches;

determining characters forming an ending portion, if any, in each of individual ones of the candidate words;

utilizing the suffix class indication to select, from among other suffixes, a representation of characters forming at least one acceptable suffix for the candidate words; and

comparing, character by character, the characters of said at least one acceptable suffix with the characters in the ending portion of each of individual ones of the candidate words for finding candidate words having acceptable ending portions;

the first and second recited steps of comparing thereby locating the candidate words which are both an accept-

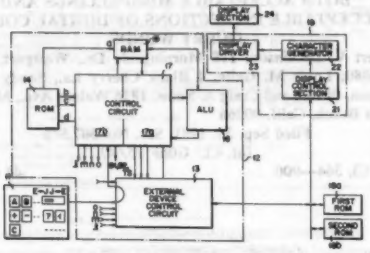
able misspelling match and an acceptable inflection of the query word.

4,499,554

ELECTRONIC TRANSLATING APPARATUS WITH EXTENDED MEMORY

Saburo Kobayashi, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1982, Ser. No. 366,198
Claims priority, application Japan, Apr. 17, 1981, 56-57886
Int. Cl.³ G06F *15/38*
U.S. Cl. 364—900 **6 Claims**



1. An electronic translating apparatus with an extended memory, comprising:

a basic memory for storing in a predetermined order a number of codes corresponding to words in a translation dictionary;

an extended memory which is physically separate from said basic memory and which stores in a predetermined order codes corresponding to words different from the codes stored in said basic memory;

address designating means, coupled to said basic memory and to said extended memory, for designating addresses of said basic memory and said extended memory and for reading out the codes of words at the designated addresses;

comparing means coupled to said basic memory and to said extended memory, for comparing the codes of words read out by said address designating means from said basic memory and extended memory, respectively;

selecting means coupled to said comparing means, for selecting one of the codes of the words compared by said comparing means according to the order in which the words would be listed in a translation dictionary;

converting means, connected to said selecting means, for converting said selected codes of the words into visual patterns; and

displaying means coupled to said converting means for displaying said visual patterns.

4,499,555

SORTING TECHNIQUE

Alan Huang, Ocean Township, Monmouth County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 6, 1982, Ser. No. 375,669
Int. Cl.³ G06F *15/21*
U.S. Cl. 364—900 **16 Claims**

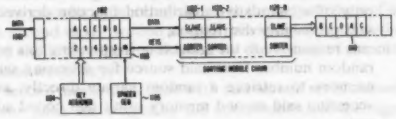
1. Apparatus for rearranging items in a desired sequence, comprising:

a plurality of serially connected sorting modules;

means in each module in said series for receiving two sequentially applied items; and

means in each module normally operative to determine an order for transmitting said items to the next module in said series by comparing the values of said items;

wherein said modules further include:



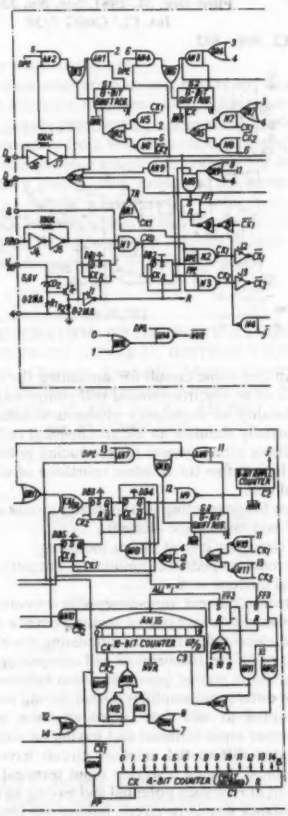
means responsive to detection of a unique spacer item for transmitting said items in the same order in which said items were received by said module.

4,499,556

SECURITY ARRANGEMENTS IN DATA TRANSFER EQUIPMENT

John W. Halpern, 14 Belsize Park Gardens, London N.W.3, England

Filed Sep. 5, 1980, Ser. No. 184,377
Claims priority, application United Kingdom, Sep. 7, 1979, 7931208
Int. Cl.³ G06K *19/06*
U.S. Cl. 364—900 **22 Claims**



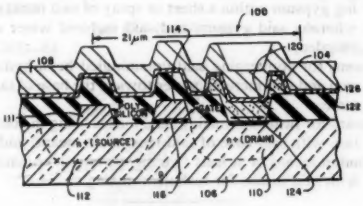
1. Data transfer equipment comprising at least one storage station for storing data and at least one control station for interaction with the storage station to alter the stored data, the

storage station including memory means for holding a reference signal and a test signal and means for transferring said reference signal to said control station, and the control station including a plurality of addressable memory locations into which different test signals can be entered at different times and selection means responsive to a reference signal from the storage to select a test signal stored by the control station and transfer it to the storage station, means for comparing the transferred test signal with the storage-station test signal and for permitting or inhibiting alteration of said stored data in the storage station in accordance with the results of the comparison, said memory locations including at any one time first and second groups of locations, the control station further including means for enabling a test signal held in one of said first group of memory locations and a reference signal representing the address of said one location to be substituted after said comparison for the test signal and reference signal previously held by the memory means in the storage station.

4,499,557
PROGRAMMABLE CELL FOR USE IN PROGRAMMABLE ELECTRONIC ARRAYS

Scott H. Holmberg, Milford, and Richard A. Flasck, Rochester, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 201,594, Oct. 28, 1980, abandoned, and Ser. No. 103,011, Dec. 13, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 281,018
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—163 **37 Claims**



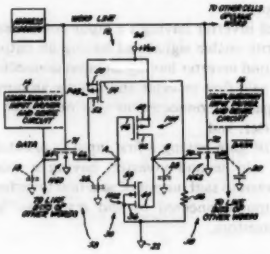
1. An improved programmable cell comprising;
an amorphous cell body, said body including at least a portion having a doped amorphous silicon alloy therein which is settable and non-resettable, said alloy portion having a highly nonconductive state settable into a highly conductive state.

4,499,558
FIVE-TRANSISTOR STATIC MEMORY CELL IMPLEMENTAL IN CMOS/BULK

Moshe Mazin, and William E. Engeler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 4, 1983, Ser. No. 464,099
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—182 **21 Claims**

1. A binary memory cell for connection to a pair of complementary data input/output lines and to an address line carrying cell-enabling signals, said cell capable of storing either of a pair of digital logic states and comprising:
a pair of voltage supply nodes;
a pair of complementary data input/output nodes
a latch for actively storing one of the logic states, said latch including a complementary pair of insulated-gate field-effect transistors, one of said active latch transistors having a channel of one conductivity type arranged to selectively electrically connect one of said data nodes to one of said voltage supply nodes, the other of said active latch transistors having a channel of opposite conductivity type arranged to selectively electrically connect the other of said data nodes to the other of said voltage supply nodes, the gate of said one latch transistor being electrically connected to said other data node, and the gate of said other latch transistor being electrically connected to said one data node;
an active pull-up insulated-gate field-effect transistor having a channel of the opposite conductivity type arranged to selectively electrically connect said one data node to said other voltage supply node, the gate of said active pull-up transistor being electrically connected to said other data node;

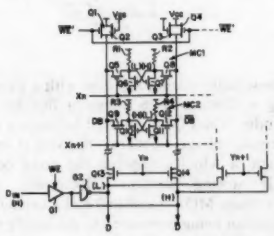


a high impedance leakage current discharge path electrically connecting said other data node to said one voltage supply node; and
a gating circuit including a pair of insulated gate field-effect transistors, the channel of one gating transistor arranged to selectively electrically connect said one data node to one of the data lines, the channel of the other gating transistor arranged to selectively electrically connect said other data node to the other data line, and the gates of said gating transistors arranged for connection to the address line for controlling conduction through the channels of said gating transistors.

4,499,559
STATIC RAM WITH BIT-LINE-CHARGING TRANSISTOR

Setsuo Kurafuji, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 261,876, May 8, 1981, abandoned. This application Jan. 31, 1984, Ser. No. 575,718
Claims priority, application Japan, May 22, 1980, 55-68270
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—190 **9 Claims**



1. A static RAM for performing read and write operations and operatively connectable to receive a write enable signal, comprising:
a plurality of bit line pairs;
a plurality of memory cells connected to each pair of said bit line pairs;
a plurality of bit line load elements, one of which is connected to a respective one of said bit lines;

a plurality of bit-line-charging transistors each having a gate, said plurality of bit-line-charging transistors respectively connected to corresponding ones of said bit lines so that each of said bit-line-charging transistors is connected between a power supply and the corresponding one of said bit lines; and

means, connected to the respective gates of said respective bit-line-charging transistors and connected to receive the write enable signal, for providing a pulse signal whenever the write enable signal changes state at the end of each write operation, said means for providing a pulse signal comprising:

a first inverter having an input connected to receive the write enable signal and having an output;

a second inverter having an input connected to said output of said first inverter and having an output;

a capacitor connected to said output of said second inverter; and

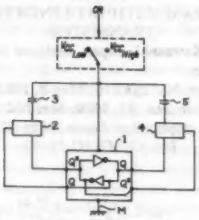
a NOR gate having a first input connected to said output of said second inverter, having a second input connected to said output of said first inverter, and having an output connected to said respective bit-line-charging transistors.

4,499,560

NON-VOLATILE FLIP-FLOP WITH A DYNAMIC RESETTING

Jean-Michel Brice, Grenoble, France, assignor to E.F.C.I.S., Grenoble, France

Filed Sep. 28, 1982, Ser. No. 425,700
Claims priority, application France, Nov. 20, 1981, 81 21802
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—228 **7 Claims**



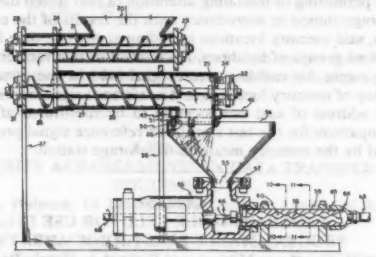
1. A non-volatile storing flip-flop with a dynamic resetting comprising a classical MOS transistor flip-flop with complementary nodes Q and Q* connected between a supply voltage and a reference voltage, further comprising at least one storing branch, each of which comprises the serial connection of a non-volatile storing element (electrically programmable threshold voltage MOS transistor) and a capacitor, a terminal of each capacitor being connected to the supply voltage, one of the main terminals and the control terminal of the storing element of the first branch being connected respectively to the node Q and the node Q* and reciprocally as regards the storing elements of the second branch; and further comprising means for modifying the supply voltage between a first level permitting the normal operation of the flip-flop and a second level permitting to condition the storing elements for memorizing the state of the flip-flop, said means also permitting to modify abruptly the power voltage from zero to the first level, thereby automatically resetting the flip-flop in the memorized state.

4,499,561

APPARATUS FOR CONTINUOUSLY PRODUCING A DRY MATERIAL AND LIQUID SLURRY

Walter R. Mason, Cincinnati, and Jimmie L. Cummings, Winchester, both of Ohio, assignors to Hoge, Warren, Zimmerman Company, Cincinnati, Ohio

Filed Dec. 6, 1982, Ser. No. 447,491
Int. Cl.³ B01F *15/02*
U.S. Cl. 366—156 **25 Claims**



1. Apparatus for continuously generating a slurry of metered dry hemi-hydrate gypsum and metered water comprising:

means for simultaneously agitating and propelling said metered dry hemi-hydrate gypsum to a removed location;

means for discharging said metered dry gypsum downward into a receptacle means;

means for generally enclosing and confining said discharging gypsum within a sheet or spray of said metered water, whereby said gypsum and said metered water are commingled;

means for converging said commingled hemi-hydrate gypsum and said metered water toward the base of said receptacle;

means for turbulent mixing, said means being in communication with said base of said receptacle means; and

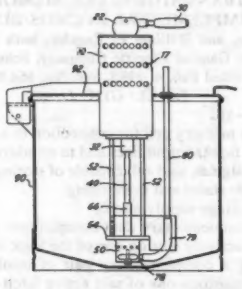
conduit means of at least two meters length communicating with said means for turbulent mixing.

4,499,562

MIXER HAVING WORKHEAD OPERABLE IN MIXING AND PUMPING MODES

John Campolini, and Dennis Khaan, both of London, England, assignors to Coldstream (Engineering) Limited, London, England

Filed Nov. 7, 1983, Ser. No. 549,902
Int. Cl.³ B01F *5/12*
U.S. Cl. 366—264 **7 Claims**



1. A mixer having a work head comprising a rotor rotatable within a stator, the stator having inlet and outlet holes, said outlet holes being arranged in a cylindrical wall of the stator, and the rotor having vanes fitting closely within the stator so

that rotation of the rotor causes liquid to be drawn in through the inlet holes and expelled through the outlet holes thereby effecting mixing of the liquid, characterised in that the cylindrical wall of the stator has an outlet aperture and an outlet tube which communicates with the outlet aperture and extends from the head, and in that the rotor is axially movable relative to the stator between a first position in which the vanes of the rotor move past the outlet holes to effect mixing of the liquid and a second position in which the vanes of the rotor are at the same level as the outlet aperture so that rotation of the rotor causes liquid to be expelled through the outlet tube.

4,499,563

APPARATUS FOR TRANSMITTING DATA FROM A BOREHOLE TO THE SURFACE OF THE EARTH DURING THE OPERATION OF A DRILLING DEVICE

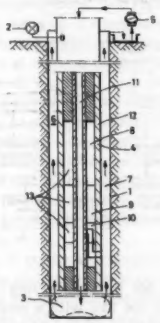
Rainer Jürgens, Altencelle, Fed. Rep. of Germany, assignor to Christensen, Inc., Salt Lake City, Utah

Filed Mar. 25, 1982, Ser. No. 361,704

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113749

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—84 **4 Claims**



1. Apparatus for transmitting data from a borehole to the surface of the earth during the operation of a drilling device which comprises a rotary drill bit, a drilling pipe string and a pump conveying a flushing liquid downwards in the flow passage of the drilling pipe string, through the rotary drill bit and upwards in the annular space of the borehole surrounding the drilling pipe string, the apparatus comprising devices disposed in the drilling pipe string to ascertain said data, to convert the data into a sequence of electrical control signals, and to produce pressure pulses in the downwardly directed flow of the flushing liquid, depending on the control signals, said devices being disposed inside chambers surrounding the flow passage of the drilling pipe string and bounded on the outside by an outer tube, said flow passage being a straight passage of constant diameter and normally unrestricted through its length whereby conventional tools can be passed through said apparatus for operation below said apparatus, and said apparatus including a rotatable valve member including a flow passage defined by a boundary wall, operation of said valve being effective to produce said pressure pulses.

4,499,564

PATTERN COMPARISON ULTRASONIC SURVEILLANCE SYSTEM WITH NOISE SUPPRESSION

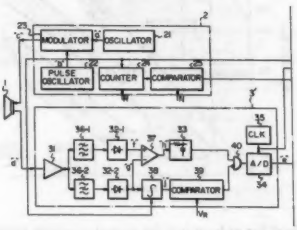
Sirou Sirai, Fukushima, Japan, assignor to Secom Co., Ltd., Tokyo, Japan

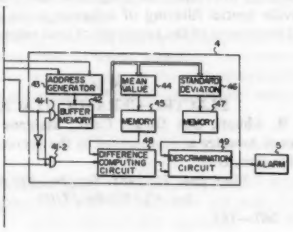
PCT No. PCT/JP80/00188, § 371 Date Jan. 7, 1982, § 102(e) Date Jan. 7, 1982, PCT Pub. No. WO82/00727, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 20, 1980, Ser. No. 341,982

Int. Cl.³ G08B *13/16*

U.S. Cl. 367—93 **5 Claims**





1. An ultrasonic surveillance system comprising: transmitter means for transmitting pulse-like ultrasonic waves to an area under surveillance; receiving means for receiving ultrasonic waves reflected from the area under surveillance to convert the reflected ultrasonic waves into electrial signals and for subjecting the electrical signals to analog-to-digital conversion; and an operation processing means for statistically comparing a reflection pattern established by the digital signals sent from said receiving means with reference patterns based upon the area under surveillance when there is no obstacle, to produce an alarm signal when these patterns are not in agreement, characterized in that said receiving means comprises:

a first frequency means for permitting frequencies of said pulse-like ultrasonic waves to pass therethrough;

a second frequency selection means for permitting frequencies other than the frequencies of said ultrasonic waves to pass therethrough;

an analog-to-digital convertor converting the output signal of said first frequency selection means;

an integrator for integrating the output signal of said second frequency selection means; and

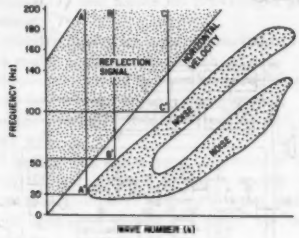
interrupting means for interrupting the signal transmission from said first frequency selection means to said analog-to-digital converter when the output level of said integrator exceeds a predetermined value.

4,499,565

METHOD AND APPARATUS FOR RECORDING BROAD-BAND SEISMIC DATA

James E. Fix, Richardson, and Gary A. Crews, Plano, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 10, 1980, Ser. No. 110,956
Int. Cl.³ G01V *0/00*
U.S. Cl. 367—49 **7 Claims**



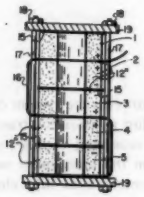
1. A method for enhancing the signal-to-noise ratio of broadband seismic signals comprising the steps of forming a receiver array consisting of a plurality of subarrays of said receivers, said receivers having preselected natural frequencies varying from one subarray to another, over a desired frequency range, and selecting the respective lengths of said receiver subarrays to provide spatial filtering of coherent noise at or above the natural frequency of the receivers of said respective subarrays.

4,499,566

ELECTRO-CERAMIC STACK

Frank R. Abbott, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1981, Ser. No. 226,668
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—165 **1 Claim**



1. In a transducer for projecting or receiving energy through a water medium including a stack of axially ferroelectric elements each having two parallel faces polarized for axial deformation or to provide signals representative of impinging acoustic energy, an improvement is provided in the conductors interposed between abutting pairs of the parallel faces of adjacent axially aligned elements that impress electric fields and pass the representative signals comprising:

a first integral, one-piece conductor fabricated from a soft lead conductive material that deforms when interposed between every other pair of abutting faces of the axially aligned ferroelectric stack shaped in a sinuous cross-sectional configuration for sinuously interleaving and intimately contacting abutting faces of every other pair of abutting faces of the axially aligned elements the length of the stack;

a second integral, one-piece conductor fabricated from a soft lead conductive material that deforms when interposed between every other pair of abutting faces of the axially aligned ferroelectric stack that are offset one element from the elements that the first integral one-piece conductor is interposed between and shaped in a sinous cross-sectional configuration for sinuously interleaving and intimately contacting abutting faces of every other pair of abutting faces of the axially aligned elements the length of the stack, the first sinuously interleaving integral one-piece conductor and the second sinuously interleaving integral one-piece conductor being orthogonally disposed with respect to one another and the axis of the stack and arranged in a contacting relationship with the axially aligned elements to couple the axially aligned elements electrically in parallel, the integral strips of conductive material are formed with round edges to reduce the possibility of corona and arcing;

end caps on opposite ends of the ferroelectric stack; and

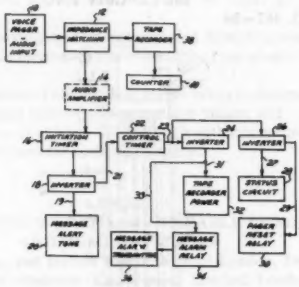
at least one nonconductive rod coupled to the end caps to exert a compressive force on the stack and integral strips of conductive material for compressing the elements and the first sinuously interleaving integral, one-piece conductor and the orthogonally disposed second sinuously interleaving integral, one-piece conductor.

4,499,567

RADIO ACTUATED RECORD CONTROLLER DEVICE

Carl R. Armstrong, 426 W. 3rd St., Apt. 1E, Connersville, Ind. 47331

Filed Jun. 21, 1982, Ser. No. 390,164
Int. Cl.³ H04B *1/00*
U.S. Cl. 369—7 **3 Claims**



1. A control circuit for interconnecting a radio actuated portable voice pager or the like with a record-play-back recorder, the pager operative in a stand-by condition to receive and respond to coded tones from a transmitter to provide an alert pager activating signal which precedes a radio transmitted voice message, said radio transmitted voice message being allotted a defined message time period, said circuit comprising:

an initiation timer;

means operative to couple the alert pager activating signal to the input of said initiation timer means to trigger said initiation timer on;

said initiation timer operative to time-out after the completion of a first predetermined time cycle interval;

control timer means;

means coupling the output of said initiation timer to the input of said control timer means, said coupling means converting the output of said initiation timer into a one-time signal for triggering said control timer means on such that said control timer means starts its predetermined time cycle interval substantially concurrently with said initiation timer time interval;

said control timer means having a second predetermined time cycle interval which is of shorter duration than the duration of the first predetermined time cycle interval;

said second time cycle corresponding to the defined message time period; and

logic means receiving the output from said control timer means for controlling relay means for operating the recorder to record the message being received by the pager only during said control timer means interval, said logic means further operative, upon said control timer means timing out, for resetting the pager to its standby condition.

4,499,568

PROCESS FOR THE TELEDISTRIBUTION OF RECORDED INFORMATION AND A SYSTEM FOR PERFORMING THIS PROCESS

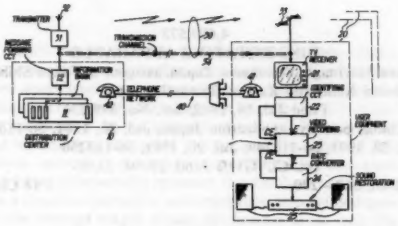
Jacques Gremillet, 2, route de Choisel, 78460 Chevreuse, France

Filed Dec. 13, 1982, Ser. No. 449,199

Claims priority, application France, Dec. 16, 1981, 81 23518

Int. Cl.³ G11B *15/02;* **H04M** *17/02;* **H04Q** *9/00*

U.S. Cl. 369—30 **9 Claims**



1. A process for the remote distribution of recorded information corresponding to sound, said recorded information having a normal speed, wherein it comprises the steps of:

forming an information recording bank, recording being carried out at a speed at least 100 times faster than said normal speed, receiving and identifying calls from subscribers requesting a particular work, forming a message consisting of a preamble constituted by an addressing code to the requesting subscriber, a message body constituted by the information corresponding to requested information and an end of message, transmitting to the requesting subscriber the said message by means of a picture transmission channel having an information flow rate of at least 50 Mbits/s,

recognizing, in equipment housed with the requesting subscriber, the addressing code of said equipment and, in the case of the reception of this code, recording the transmitted message body, after reception of the end of message, reading the recorded message and decelerating the read message in order to give it its normal speed again and restoring the corresponding information on the basis of the decelerated message.

4,499,569

WRITING BEAM FOCUS MONITOR

Eduardo A. Lopez De Romana, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Sep. 7, 1982, Ser. No. 415,501

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—45 **19 Claims**

1. A method for monitoring the focus condition of a writing light beam impinging upon the writing surface of a recording medium, comprising the steps of:

providing a source of high intensity light to form a writing light beam;

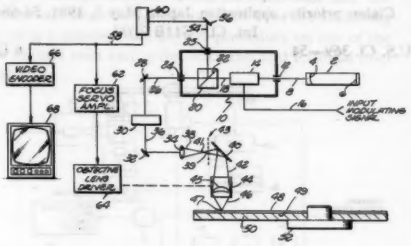
directing said light beam through a signal-responsive light beam modulator;

passing the modulated beam from the modulator along a path through a quarter-wave plate and an objective lens to impinge, in focussed condition, incident upon the writing surface of the medium;

directing the light beam reflected from the medium in a reverse direction along said path through the objective lens, the converging lens, and the quarter-wave plate, and to the modulator;

diverting the reflected light beam reaching the modulator out of the path of the incident writing beam and onto a light sensitive transducer;

sensing the output signal of the transducer to monitor the



focus condition of the writing beam at the surface of the medium;

preserving a recording of the profile characteristics of the beam impinging the transducer when the writing beam impinging the surface of the medium is in focus, to define a reference profile; and

when the writing beam impinging the surface of the recording medium is out of focus, adjusting the optics affecting focus of the writing beam on the recording medium until the beam impinging the transducer assumes said reference profile.

4,499,570

DROPOUT CIRCUIT ARRANGEMENT FOR CONVERTING AN INFORMATION SIGNAL INTO A RECTANGULAR SIGNAL

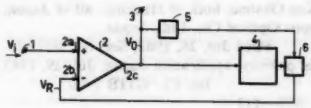
Kornelis A. Schouhamer Immink, and Ronaldus M. Aarts, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 11, 1982, Ser. No. 338,716

Claims priority, application Netherlands, Nov. 11, 1981, 8105095

Int. Cl.³ G11B *27/36;* **H04N** *5/94*

U.S. Cl. 369—48 **3 Claims**



1. A circuit arrangement for converting an information signal read from a record carrier into a rectangular signal, which arrangement comprises

a threshold-value circuit having a first input for receiving the information signal, a second input for receiving a reference signal, and an output, which threshold-value circuit is adapted to produce a rectangular output signal on its output, whose edges correspond to the instants at which the information signal passes through the value of the reference signal, and

means for generating the reference signal for the threshold-value circuit depending on the information signal being read,

means for detecting dropouts in the information signal being read, and

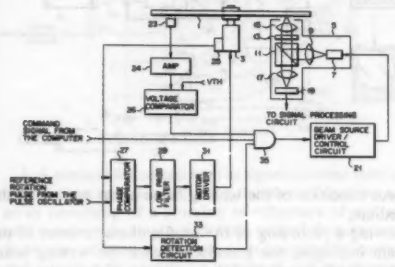
means coupled to said dropout detecting means for maintaining, during the dropout, the reference signal applied to the threshold-value circuit at substantially the value of the reference signal at the beginning of the dropout.

4,499,571

OPTICAL DISK SYSTEM WITH LASER SAFETY ARRANGEMENT

Tsuneshi Yokota, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki, Kawasaki, Japan

Filed Apr. 30, 1982, Ser. No. 373,784
Claims priority, application Japan, May 1, 1981, 56-66471
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—54 **6 Claims**



1. An optical disk apparatus having an optical disk, a motor for rotating the disk and an optical head for emitting a laser beam, in which a laser beam illuminates the disk thereby to record data on the disk and read out data from the disk, the improvement comprising:

(a) first detection means for detecting non-rotation of the disk;

(b) second detection means for detecting absence of the disk in a prescribed position; and

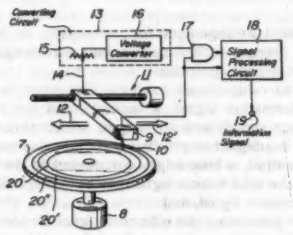
(c) control means electrically connected to the first and second detection means for turning off a laser beam source in response to output signals from the first and second detection means.

4,499,572

METHOD FOR READING INFORMATION OR DEFECT OUT OF ROTATING DISC

Shozi Yoshikawa, Hachioji; Masaharu Sakamoto, Tokyo; Hiroshi Kodama, Hachioji; Kunio Yamamiya, Tokyo; Kiichi Kato, and Ken Ohsima, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Jul. 26, 1982, Ser. No. 402,075
Claims priority, application Japan, Jul. 29, 1981, 56-118647
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—111 **8 Claims**



1. A method of detecting information or defects out of a disc by rotating the disc at a constant angular velocity with respect to a pick-up head which is moved in a radial direction of the disc and scans the disc along spiral or concentric tracks to produce a detection signal, comprising the steps of

detecting a position of the pick-up head above the disc to produce a position signal;

generating in response to said position signal a pulse signal having a frequency which is proportional to a distance from a center of the disc to the pick-up head; and

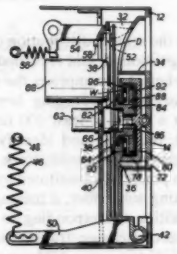
deriving an output signal from the detection signal supplied from the pick-up head under the control of said pulse signal.

4,499,573

DISC ROTATING APPARATUS

Kaoru Morinaga, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 19, 1982, Ser. No. 399,234
Claims priority, application Japan, Jul. 20, 1981, 56-113248; Jul. 20, 1981, 56-113249; Jul. 20, 1981, 56-113250
Int. Cl.³ G11B *3/60, 25/04, 23/00*
U.S. Cl. 369—270 **14 Claims**



1. An apparatus for rotating a disc comprising:

a turntable adapted for receiving the disc;

clamping means, including a holder and a plunger, for engaging and clamping the disc firmly into cooperation with said turntable when the plunger is in a first position and for permitting the removal of the disc from the turntable when the plunger is in a second position; said holder being positioned opposite to the turntable;

said plunger being adapted to engage the side of the disc opposite to the turntable, being slideable relative to said holder, and being rotatable about its own axis;

a first permanent magnet fixed to a portion of the plunger and magnetic material fixed to the holder and positioned between the turntable and the portion of the plunger to which the permanent magnet is fixed, said first permanent magnet and magnetic material cooperating to create a magnetic clamping force for urging the plunger to slide relative to the holder toward the turntable; and

means for creating a revolving magnetic field for rotationally driving said permanent magnet together with said plunger about the plunger's axis, said magnetic field creating means and the permanent magnet cooperating to provide a magnetic motor system serving as a means for rotating the turntable, the disc and the plunger when the plunger is in the first position and the disc is clamped between the turntable and the plunger.

4,499,574

RECORD CARRIER WITH AN OPTICALLY READABLE INFORMATION STRUCTURE

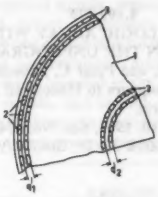
Josephus J. M. Braat, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1979, Ser. No. 46,419

Claims priority, application Netherlands, Mar. 27, 1979, 7902363

Int. Cl.³ G11B 5/82, 7/06

U.S. Cl. 369—275 5 Claims



1. A record carrier with an optically readable information structure comprising information areas arranged in a plurality of spaced apart tracks and separated from each other in the track direction by intermediate areas, at least the length of said information areas in the track direction varying in accordance with the information contained therein and the width of said information areas in a direction perpendicular to said track direction being substantially constant, the distance between the tracks in a direction normal to said track direction being dependent on the average length of said information areas such that said distance between tracks increases with decreasing average length of said information areas to thereby reduce cross-talk during reading of the information recorded on said carrier.

4,499,575

GROUP OF TERMINAL UNITS FOR A DIGITAL EXCHANGE

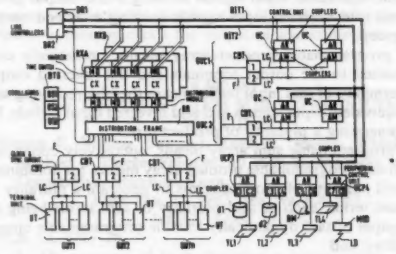
Bernard Dupuis, Montigny Le Bretonneux, and Francois Behague, Gif Sur Yvette, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Sep. 20, 1982, Ser. No. 420,210

Claims priority, application France, Sep. 18, 1981, 81 17645

Int. Cl.³ H04J 3/00

U.S. Cl. 370—58 7 Claims



1. A group of terminal units in an exchange which comprises a switching network having four independent planes of time switches controlled by markers, the terminal units being organised into groups connected to the switching network and each terminal unit including a microprocessor and terminals each of which is constituted by some specific piece of exchange equipment the switching network also having distribution modules for distributing clock signals and synchronising signals and control units for controlling and managing the terminal units and the distribution modules, the improvement wherein each group of terminal units comprises two clock and synchronisation circuits each having a time base connected to a distribution module, first and second synchronisation circuits each connected to a plane of the switching network via an outlet link and via a terminal inlet link to the terminal units, and third and fourth synchronisation circuits each connected via an inlet link to each of the planes to which the first and second synchronising circuits are connected and via a terminal outlet link to the terminal units, and wherein the control of a terminal unit by a control unit is performed by interchanging messages between the microprocessors of the terminal unit and the control unit, said interchange taking place over the switching network using a question and answer procedure on one of the time slots on said inlet and outlet links and said terminal inlet and outlet links.

4,499,576

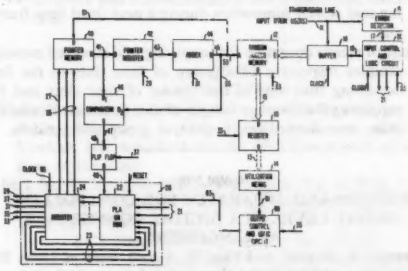
MULTIPLEXED FIRST-IN, FIRST-OUT QUEUES

Alexander G. Fraser, Bernardsville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 13, 1982, Ser. No. 407,885

Int. Cl.³ H04J 3/00

U.S. Cl. 370—60 3 Claims



1. Apparatus for temporarily storing a plurality of packets in a plurality of first-in, first-out queues, each of said packets comprising one or more information bits being received on a transmission line as a multiplexed stream of said packets transmitted from a plurality of sources, each of said packets being identified with one of said sources, said apparatus characterized by

means for identifying said source of each of said packets,

means for assigning each of said packets to one of said first-in, first-out queues,

means for storing said packets in said first-in, first-out queues, and

means for indicating when each of said first-in, first-out queues has at least one of said packets stored therein,

said indicating means further comprising

means for registering the change of state in response to said first-in, first-out queue having entered therein at least one of said packets, and

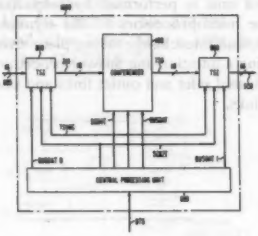
means for periodically and simultaneously reading and storing therein the status of all of said first-in, first-out queues registered in said change of state means.

4,499,577

LINEAR TIME DIVISION MULTIPLEXED CONFERENCER FOR DATA TRANSFER APPLICATIONS

Lawrence Baranyai, Holmdel, and John R. Colton, Freehold, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 18, 1982, Ser. No. 434,822
Int. Cl.³ H04Q *11/04*; H04M *3/56*
U.S. Cl. 370—62 **18 Claims**



1. A system for accepting message samples at an input, said message samples arriving in time slots within a frame, said system comprising

means for selectively summing said message samples of groups of said time slots,

first storage means having a plurality of memory locations for storing each said summed message samples during a first time frame and for supplying said stored summation during a next second time frame,

second storage means having a plurality of memory locations for storing each said summed message samples accepted during said next second time frame and for supplying said stored summation during a next third time frame, and

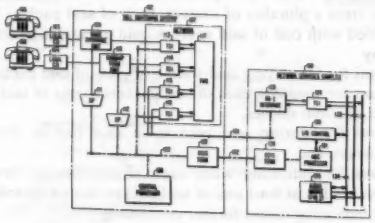
control means operative for supplying said summed message samples respective to a group of time slots to the first occurring time slot of that group of time slots and for supplying the message sample of said first time slot to the other time slots of said respective group of time slots.

4,499,578

METHOD AND APPARATUS FOR CONTROLLING SIGNAL LEVEL IN A DIGITAL CONFERENCE ARRANGEMENT

Mohamed A. Marouf, and Paul W. Vancil, both of Lisle, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 382,672, May 27, 1982, Pat. No. 4,475,190. This application Oct. 29, 1982, Ser. No. 437,740
Int. Cl.³ H04M *3/56*
U.S. Cl. 370—62 **32 Claims**



1. In a digital conference arrangement having a plurality of ports for receiving information samples each representing the level of a signal, a method for controlling the signal level represented by an information sample to be included in an output sample for distribution to the ports; comprising the steps of:

forming a composite level from the signal levels represented by information samples received on a port,

generating a coefficient in accordance with said composite level,

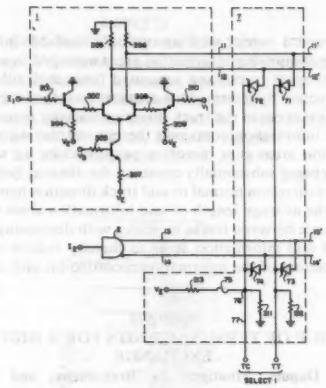
adjusting in accordance with said coefficient the signal level represented by an information sample from the port to be included in an output sample.

4,499,579

PROGRAMMABLE LOGIC ARRAY WITH DYNAMIC TEST CAPABILITY IN THE UNPROGRAMMED STATE

David W. Still, Phoenix, and Peter C. Economopoulos, Scottsdale, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Mar. 10, 1983, Ser. No. 474,070
Int. Cl.³ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—15 **6 Claims**



1. A dynamically testable programmable circuit array having a plurality of input terminals, each input terminal adapted to receive one of a plurality of input signals, comprising:

(a) input buffer means, having a plurality of output terminals and inverted output terminals, said input buffer means operatively connected to said input terminals, for outputting equivalent input signals and inverted input signals, said equivalent input signals forming a first output group and said inverted input signals forming a second output group;

(b) programmable product array means, operatively connected to the output terminals and the inverted output terminals of said input buffer means thereby receiving said equivalent input signals and said inverted input signals, for generating a plurality of product terms;

(c) programmable sum array means, operatively connected to said programmable product array means, for combining said plurality of product terms to generate a plurality of sum terms, each of said plurality of sum terms being an output of said dynamically testable programmable circuit array; and

(d) test means, having a first and second control input terminal adapted to receive a first and second control signal, operatively coupled to the output terminals of said input buffer means, for causing one of said output groups to have a predetermined logic state, said test means including;

(i) a plurality of first circuit component means, each of said first circuit component means operatively connected to a respective output terminal and inverted output terminal of said input buffer means, and further, each of said first circuit component means which is

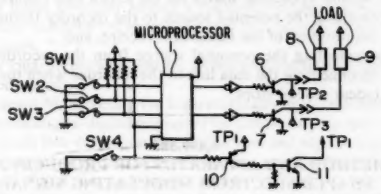
operatively connected to a respective output terminal of said input buffer means being operatively connected to said first control input terminal, and each of said first circuit component means which is operatively connected to a respective inverted output terminal of said input buffer means being operatively connected to said second control input terminal, for causing each of said output terminals and each of said inverted output terminals of said input buffer means to be forced to a first predetermined logic level in response to said first and second control signals, respectively; and

(ii) second circuit component means, operatively connected to one of said control input terminals, for forcing a second predetermined logic level to the respective control input terminal in the absence of the respective control signals, said second predetermined logic level partially enabling the respective inputs of said programmable product array means.

4,499,580
OUTPUT CHECK APPARATUS FOR ELECTROPHOTOGRAPHIC COPIER

Izumi Takahashi; Kenichiro Nakayama; Terumasa Sugiyama, and Takanobu Suzuki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,150
Claims priority, application Japan, Jul. 15, 1981, 56-109220
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—17 **4 Claims**



1. Test apparatus for use with an electrophotographic copier control system comprising; sensor means in said copier, a controller receiving inputs from said sensor means and generating outputs for driving plural loads via drive circuits, means for switching said controller to a check mode, check drive circuits having equivalent circuits as said drive circuits, and means for selectively coupling said check drive circuits to said loads, to thereby check the output of said controller.

4,499,581
SELF TESTING SYSTEM FOR REPRODUCTION MACHINE

Dennis E. Miazga, Fairport; Tuan A. Nguyen, Webster, and Michael T. Dugan, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

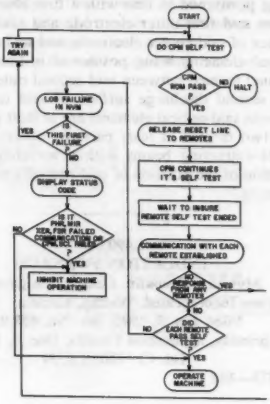
Filed Sep. 21, 1982, Ser. No. 420,967
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—20 **5 Claims**

1. The process of fault checking a reproduction machine having a main controller and plural remote controllers coupled together by a shared communication line through which operating instructions for said machine is transmitted, said machine including display means for visually identifying faults, the steps comprising:

(a) individually testing the operating integrity of said main controller and said remote controllers;

(b) polling said remote controllers by establishing communication between said main controller and said remote controllers when testing of all of said controllers is completed to identify to said main controller any failed remote controller;

(c) when communication by said main controller with said remote controllers cannot be established, attempting to establish communication between at least two of said remote controllers directly with one another to identify whether said communication line or said master controller is at fault;



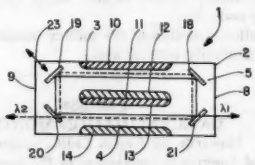
(d) repeating testing of said controllers in the event a fault is detected in one of said controllers; and

(e) inhibiting operation of said reproduction machine in response to said fault being detected a second time in said one controller when testing of said controllers is repeated or when said communication line is identified as having a fault.

4,499,582
LASER SYSTEM

Heinrich Karning, Albert-Fritz-Str. 6, 6900 Heidelberg; Franz Prein, Tulpenweg 3, 6901 Waldhilsbach, and Karl-Heinz Vierling, Joh.-Seb.-Bach-Str. 46, 6901 Bammental, all of Fed. Rep. of Germany

PCT No. PCT/DE81/00021, § 371 Date Dec. 4, 1981, § 102(e) Date Dec. 4, 1981, PCT Pub. No. WO81/02952, PCT Pub. Date Oct. 15, 1981
PCT Filed Jan. 24, 1981, Ser. No. 329,267
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013300; Apr. 5, 1980, 3013301
Int. Cl.³ H01S *3/081*
U.S. Cl. 372—93 **20 Claims**



1. A laser system comprising:

(a) a housing defining a resonator chamber having two opposite ends and sidewalls disposed between said ends;

(b) an electrode system disposed within said housing, comprising:

(i) a center electrode having first and second discharge surfaces for electrical discharge;

(ii) a first outer electrode disposed in facing spaced rela-

tionship to said first discharge surface of said center electrode and

(iii) a second outer electrode disposed in facing spaced relationship to said second discharge surface of said center electrode; and

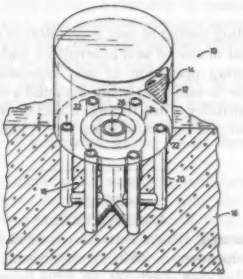
(c) at least four optical elements provided at the ends of said housing, and positioned, configured and dimensioned to form an optical loop, said first and second optical elements being positioned in line with a first channel formed between said first outer electrode and said first discharge surface of said center electrode, and said third and fourth optical elements being positioned in line with a second channel formed between said second outer electrode and said second discharge surface of said center electrode, wherein said optical elements are at least partially reflecting, two of said at least partially reflecting optical elements extracting beams with a wavelength which is a function of the position of said partially reflecting optical elements.

4,499,583

INDUCTION FURNACE

Joseph A. Mulcahy, Brooklin, Canada, assignor to J. Mulcahy Enterprises Incorporated, Whitby, Canada

Filed Jan. 3, 1983, Ser. No. 455,014
Claims priority, application Canada, Dec. 3, 1982, 417009
Int. Cl.³ H05B 6/34
U.S. Cl. 373—161 **9 Claims**



1. A method of induction heating of a body of molten metal in a bath thereof, which comprises:

forming a magnetic field rotating about a generally vertical axis in operative relationship with said body of molten metal, thereby simultaneously electromagnetically inducing:

(1) flow of molten metal which is not electromagnetically heated from the molten metal body and flow of electromagnetically heated molten metal to the molten metal body and

(2) rotational motion of the molten metal in the bath about said generally vertical axis.

4,499,584

DATA VALIDATION MONITOR

Robert F. Howarth, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1983, Ser. No. 499,030
Int. Cl.³ H04L 1/22
U.S. Cl. 375—58 **14 Claims**

12. A method of improving the validity of data by rejecting spurious signals from a recorder comprising:

providing at least one sensor data channel receiving data from a data source to the recorder;

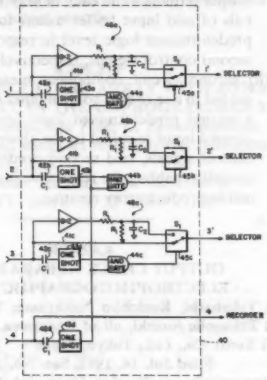
providing a blind data channel adjacent and from the data source to the recorder;

providing a data link to the recorder for the sensor data channel;

generating a sensor channel pulse whenever a signal on the sensor data channel exceeds a predetermined threshold;

generating a blind data channel use whenever a signal on the blind channel exceeds a predetermined threshold;

initiating an interruption of the data link for the duration of



a coincident receipt of the sensor channel pulse and the blind channel pulse;

providing a potential source for the sensor data channel; and

connecting the potential source to the recorder throughout the duration of the coincident receipt; and

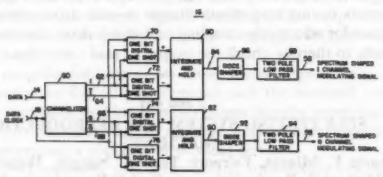
disconnecting the potential source from the recorder and reconnecting the data link to the recorder when the coincident receipt stops.

4,499,585

METHOD AND APPARATUS FOR PRODUCING A SHAPED SPECTRUM MODULATING SIGNAL

William H. Mosley; David E. Sanders, both of St. Petersburg, and Richard E. Roberson, New Port Richey, all of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Oct. 14, 1982, Ser. No. 434,415
Int. Cl.³ H03C 3/04
U.S. Cl. 375—62 **22 Claims**



1. A method for producing a shaped spectrum modulating signal, comprising the steps of:

generating quadrature I and Q channel digital signals derived from an input signal wherein the I and Q channel signals have first and second data states,

detecting transitions between the first and the second data states for each of the I and Q channel signals,

generating first and second data signals from the I and the Q channel signals, respectively, each of the data signals having a positive ramp signal segment upon the detection of a transition from the first data state to the second data state for the corresponding one of the I and the Q channel signals, and each of the data signals having a negative ramp signal segment upon the detection of a transition

from the second data state to the first data state for the corresponding one of the I and the Q channel signals,

low pass filtering the first data signal to produce a shaped spectrum I channel modulating signal, and

low pass filtering the second data signal to produce a shaped spectrum Q channel modulating signal.

4,499,586

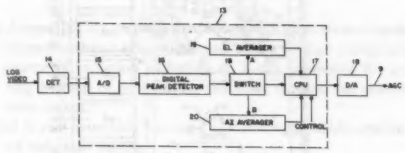
MICROPROCESSOR CONTROLLED AGC

Thomas Cafarella, East Northport, and Mohamed Enein, Northport, both of N.Y., assignors to Hazeltine Corporation, Commack, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,830

Int. Cl.³ H04L *27/08*

U.S. Cl. 375—98 **3 Claims**



1. An apparatus for receiving recurring first and second scanning signal comprising:

(a) means for receiving the first and second signals;

(b) means for converting each of the received signals into a corresponding intermediate frequency signal;

(c) a linear amplifier having a controllable gain input, said linear amplifier for amplifying said intermediate frequency signals;

(d) a logarithmic amplifier for amplifying the linearly amplified signals;

(e) means for detecting the logarithmically amplified signals;

(f) an analog-to-digital converter for converting the detected signals into corresponding digital first and second signals;

(g) a digital peak detector for detecting a peak magnitude of said digital first and second signals;

(h) first means for providing a first average peak magnitude signal corresponding to an average of the magnitudes of the detected peaks of the digital signal corresponding to said received first signal;

(i) second means for providing a second average peak magnitude signal corresponding to an average of the magnitudes of the detected peaks of the digital signal corresponding to said received second signal;

(j) means for providing a digital gain control signal in response to the first and second average peak magnitude signals; and

(k) digital-to-analog converter means for converting the first and second digital gain control signals into corresponding analog gain control signals which are applied to the gain control input of said linear amplifier.

4,499,587

COUNTING DEVICE FOR INFORMATION RECORDING-REPRODUCING DEVICE

Isao Harigaya, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,623

Claims priority, application Japan, Sep. 24, 1980, 55-133195; Sep. 24, 1980, 55-133207

Int. Cl.³ G06M *3/08*

U.S. Cl. 377—18 **2 Claims**

1. A counting device for counting the used amount of the recording medium capable of recording and reproducing information such as pictures, voices and so on and of being loaded into or taken out of the information recording or the record reproducing device, comprising:

signal producing means for producing signals in accordance with the running of the recording medium;

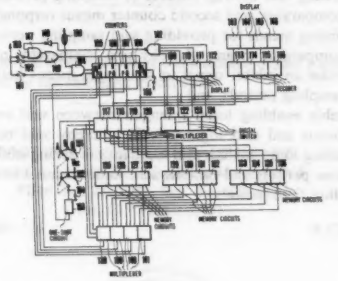
a counter for counting the signals;

display means for displaying the content of the counter;

plural number of memory means for memorizing the content of the counter;

selection means for selecting a memory means to be connected to the counter, whereby display means is changed over from displaying the content of said counter to display the content of a selected memory means when said memory means is connected to said counter;

set means for setting the total usable length of the recording medium;



comparator means for comparing the content of the set means with that of the counter so as to produce a coincidence signal;

means for producing a signal when the recording medium is taken out of the recording device;

means to be operated alone so as to produce a reset signal of the counter; and

gating means for carrying out the reset operation of the counter either with the logic product of the coincidence signal from the comparator means with the signal produced when the recording medium is taken out of the recording device or with the reset signal.

4,499,588

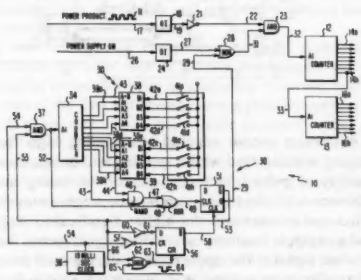
SYSTEM FOR CONVERTING THE FREQUENCY OF A PULSE TRAIN TO A BINARY NUMBER

Craig E. Deyer, Akron, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,428

Int. Cl.³ H03K *13/20, 13/256, 21/36*

U.S. Cl. 377—42 **6 Claims**



1. A system for converting the frequency of a pulse train to a binary number and providing said binary number to a computer controlled system comprising:

input logic means responsive to said pulse train for providing frequency pulses;

output counter means responsive to said frequency pulses for providing binary numbers representative of the number of frequency pulses received;

timing means for setting sampling time periods;

enabling means for selecting a desired number of said sampling time periods and for enabling said logic means during said sampling time periods whereby said counter means provides said binary number representative of the frequency of said pulse train during said sampling time periods;

said enabling means including comparator means; means for setting said desired number of sampling periods into said comparator, and second counter means responsive to said timing means for providing said sampling periods to said comparator means whereby said comparator means provides an inhibit signal to said logic means between said sampling periods; and

bistable enabling logic arranged between said comparator means and said logic means, whereby said bistable enabling logic enables said logic means during said sampling time periods and inhibits said logic means between sampling time periods.

4,499,589

COUNTER CIRCUIT FOR COUNTING HIGH FREQUENCY PULSES USING THE COMBINATION OF A SYNCHRONOUS AND AN ASYNCHRONOUS COUNTER

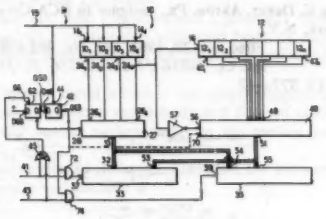
Michel Geesen, Antony, France, assignor to Electronique Marcel Dassault, Paris, France

Filed Oct. 19, 1981, Ser. No. 312,477

Claims priority, application France, Oct. 20, 1980, 80 22416

Int. Cl.³ H03K *21/02, 21/08, 21/16*

U.S. Cl. 377—55 **12 Claims**



1. A counter circuit adapted to counting high frequency pulses and to being read while counting said pulses, comprising a plurality of pulse counting stages of increasing numerical significance with the lower significance stages connected as a synchronous counter and the higher significance stages connected as a ripple counter, early count signal means for applying a count signal to the ripple counter during each count cycle of the synchronous counter at an instant which is early relative to the synchronous counter cycling from its full count to its empty count, and read means including read timing means connected to read the state of the ripple counter regularly at a predetermined state of the synchronous counter.

4,499,590

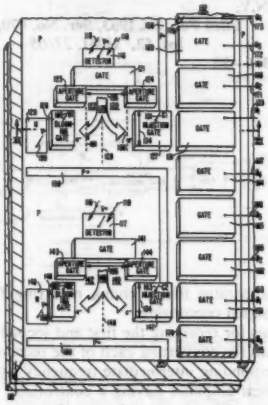
SEMICONDUCTOR CIRCUIT FOR COMPRESSING THE DYNAMIC RANGE OF A SIGNAL

Nathan Bluzer, Silver Springs, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 327,155, Dec. 3, 1981, abandoned. This application Jan. 14, 1983, Ser. No. 458,223

Int. Cl.³ G11C *19/28;* **H01L** *29/78, 27/14, 31/00*

U.S. Cl. 377—60 **24 Claims**



1. A device for compressing the dynamic range of an input signal comprising:

a semiconductor substrate having a channel doped with impurities for forming a depletion mode channel therein and adapted for receiving charge indicative of said input signal,

a charge barrier across said channel having an aperture of predetermined width for passing charge through said barrier from a first side to a second side of said barrier,

a first region formed in said substrate positioned adjacent said second side of said barrier and to a first side of a center line through said aperture for generating a first electric field having a first potential gradient in said channel as a function of its potential for attracting charge passing through said aperture,

a second region formed in said substrate positioned adjacent said second side of said barrier and to a second side of said center line through said aperture for generating a second electric field having a second potential gradient in said channel as a function of its potential for attracting charge passing through said aperture,

first means for applying a first predetermined potential to said first region at selected times and for electrically isolating said first predetermined potential from said first region at other times to allow said first region to float electrically,

second means for applying a second predetermined potential to said second region,

said first and second predetermined potentials having a voltage sufficient to deplete the channel between said first and second regions of majority charge and to attract charge in said channel through said aperture from said first side to said second side, and

means for generating an output signal indicative of the charge collected on said first region.

4,499,591

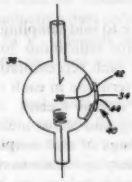
FLUOROSCOPIC FILTERING

Gary Hartwell, Rte. 1, Box 260X, Troy, Va. 22974

Filed Nov. 17, 1982, Ser. No. 442,318

Int. Cl.³ A61B *6/00*

U.S. Cl. 378—062 **12 Claims**



1. Apparatus for limiting the radiation dosage to an examination object within a limited photon energy range comprising,

a source of radiation including an X-ray generator for emitting a beam of penetrating radiation toward the examination object,

said X-ray generator having a slot through which said beam of radiation passes,

a radiation beam limiting device positioned on said X-ray generator in overlying relation with said slot,

a protective filter positioned in the path of said beam between said source and the examination object,

said protective filter being supported by said radiation beam limiting device such that the center of the radiation beam emitted from the X-ray generator passes through said protective filter,

said protective filter composed of a material having a preselected critical absorption edge energy operable to obstruct from the beam photon energy below 20 keV and permit a filtered beam having a photon energy above 20 keV to pass through the examination object,

a radiation detector positioned to receive the filtered radiation emerging from the examination object,

said radiation detector being operable to generate an output signal corresponding to the intensity of the emerging filtered radiation, and

image processing means for converting said output signal to a radiographic image displaying the examination object.

4,499,592

X-RAY TUBE HAVING FLASHOVER PREVENTION MEANS

Horst Brettschneider, Tangstedt, and Walter Hartl, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,958

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116169

Int. Cl.³ H01J *35/16*

U.S. Cl. 378—121 **6 Claims**

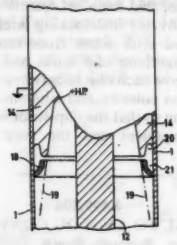
1. An X-ray tube comprising:

(a) an electrically-conductive housing;

(b) an insulator having a cavity at one end, said end including an outer surface, an inner surface defining the cavity, and an end surface extending between the inner and outer surfaces, said end being disposed within and affixed to the housing;

(c) a high-voltage electrode at least partly enclosed within the housing, said high voltage electrode extending into the cavity and being secured to the insulator;

characterized in that said X-ray tube includes a shielding electrode electrically-connected to the housing, said shielding electrode being disposed within the housing such that it is closely-spaced from the end surface of the insulator and being shaped such that it inhibits impingement on the inner surface of the insulator of any electrons emitted by the shielding electrode.



4,499,593

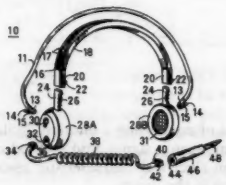
MODULAR STEREO HEADPHONES

Gary W. Antle, 6 Atwood St., Kingston, Mass. 02364

Filed Jul. 25, 1983, Ser. No. 516,745

Int. Cl.³ H04R *5/00*

U.S. Cl. 381—25 **8 Claims**



1. A modular stero headphone apparatus comprising:

a tensioned headband comprising an arcuate member to fit over the top of a wearer's head provided along the length of the headband with a means for removably receiving a length of wire, and at each end of the headband a means for adjustably and removably receiving a headphone;

a headphone adjustably and removably attached to each end of the headband, a first of which headphones is provided with a first receptacle shaped for removably receiving a polarity correct clip wired to a sound transmitting source and a second receptacle shaped for removably receiving a polarity correct clip wired to a second headphone, which second headphone is provided with a single receptacle for removably receiving a polarity correct clip wired to the first headphone and each headphone is provided with a protrusion to fit adjustably and removably into an end of the headband;

a first wire component comprising a signal transmitting conducting wire for each of the two headphones and two grounding wires all within an insulating covering, and at a first end of the first wire component a polarity correct clip which plugs removably into a male connector plug to a sound transmitting source, and at a second end of the first wire component a polarity correct clip which plugs removably into the first receptacle of the first headphone;

a second wire component removably secured to the headband, which second wire component comprises a single signal transmitting conducting wire and a single ground wire within an insulating covering, and at a first end of the second wire component a polarity correct clip which plugs removably into the second receptacle of the first headphone and at a second end of the second wire component a polarity correct clip which plugs removably into the receptacle in the second headphone;

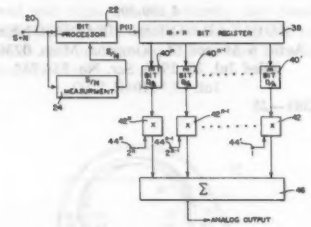
wherein each polarity correct clip comprises a molded body enclosing wires exposed at an end face of the clip and extending eccentrically from the clip body a movable latching means, and each receptacle is provided with a matching removably interlocking latch and each receptacle is provided with wires from sound components to contact the matching clip wires and each receptacle is shaped to receive each clip in only one orientation thereby assuring correct polarity, and wherein each clip is secured to the insulation so that the clip absorbs any tension put on the wire component and the wire contacts are not stressed.

4,499,594

DIGITAL TO ANALOG CONVERTER

Sidney W. Lewinter, Redondo Beach, Calif., assignor to The Aerospace Corporation, Los Angeles, Calif.

Filed Jun. 10, 1982, Ser. No. 386,836
Int. Cl.³ G10L 1/00
U.S. Cl. 381—46 **6 Claims**



1. A method of converting a multibit digital data word into a corresponding analog signal, said method comprising:

measuring an electrical characteristic associated with each bit position in the word;

measuring the signal to noise ratio associated with the word to be converted;

generating a probability value for each bit corresponding to the probability that the bit is a given logical state as a function of the measured signal to noise ratio and the electrical characteristics of the bit; and

using said probability values of the bits as scaling factors for each bit position in the generation of a corresponding analog signal for the digital word thereby reducing potential error.

4,499,595

SYSTEM AND METHOD FOR PATTERN RECOGNITION

William Massaitis, Castle Hayne, and Robert O. Canada, Wilmington, both of N.C., assignors to General Electric Co., Orlando, Fla.

Filed Oct. 1, 1981, Ser. No. 307,541
Int. Cl.³ G06K 9/68
U.S. Cl. 382—9 **46 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 63 Pages)

1. A system for serially reading out a succession of unknown, discrete line patterns approximately conforming to an expected pattern size, spacing and line width respectively and disposed in approximate alignment along a predetermined pattern on a pattern-carrying medium,

each of said unknown patterns being selected from at least one set of known mutually different patterns;

said system comprising:

means for illuminating said medium:

a light-receiving system including an array of light sensitive devices for sensing diffused light reflected from said path, said array being adapted to generate a plurality of output signals each having an amplitude which is a function of the intensity of light reflected by a corresponding one of a plurality of discrete area elements on the surface of said medium;

means for periodically sampling said output signals of said array, successive samplings of said output signals of said array being representative of the light reflected by successive columns of said discrete area elements on said medium surface, wherein each column is perpendicular to said path;

means responsive to said samplings of said output signals for providing status indications for respective ones of said area elements each representative of the presence or absence of a pattern line in each of said area elements;

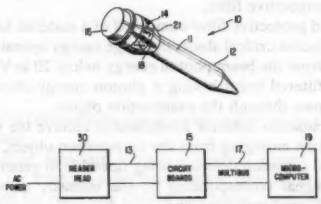
first and second storage means;

means for storing said status indications derived from successive samplings of said output signals of said array at addressable memory locations of said first storage means, said stored status indications jointly defining a pattern map of each of said unknown patterns by the position of said status indications on an imaginary grid matrix whose matrix elements correspond to said area elements of said pattern-carrying medium surface;

means for counting said status indications representative of the presence of a pattern line in each of said area elements derived from each of said samplings;

means for determining the running sum of said line-present status indications for M samplings, where M samplings covers a dimension in the path direction which approaches without exceeding the expected pattern dimension in said path direction;

means for storing a predetermined count threshold in said second storage means;



means for comparing the running sum of line-present status indications in the information accumulated from M samplings of said array output signals until first and second running sums are detected which are, in sequence, smaller and greater respectively than said count threshold;

means for accumulating said status indications in said first storage means from a plurality of successive samplings, said plurality of samplings comprising said M samplings whose running sum is greater than said count threshold and N subsequent samplings, where N+M is the number of samplings required to completely cover said succession of unknown patterns;

means for collecting data from said stored status indications;

means for determining the running sum of line-present status indications in said collected data for P samplings, where P is the number of samplings required to cover the maximum expected pattern dimension in said path direction;

means for detecting peaks in said last-recited running sum of line-present status indications;

means for eliminating data collected from said samplings outside a span which asymmetrically straddles a first selected one of said peaks in said path direction, said span measuring $H_1 > P$, said last-recited means being effective to reduce the area for consideration in said grid matrix to a portion of the latter which includes a first unknown pattern corresponding to said first selected peak;

means for locating the centroid of said status indications representative of the presence of a pattern line in each of

said area elements in said path direction within said grid matrix portion;

means for locating the centroid of said status indications representative of the presense of a pattern line in each of said area elements in said grid matrix portion in a direction perpendicular to said path;

means for reducing the area for consideration of said grid matrix portion by eliminating data collected outside a span having a dimension of V_1 elements in said perpendicular direction centered on said last-located centroid, where $V_1 > P$;

said centroid-locating and area-reducing means being adapted to carry out at least one further area reduction to locate said first unknown pattern within a grid matrix portion having dimensions in said path direction and said perpendicular direction respectively of H_2 by V_2 elements where $H_1 > H_2$ P, and $V_1 > V_2 > P$;

means including said centroid-locating and area-reducing means for locating the remaining unknown patterns of said succession in identically dimensioned grid matrix portions each of which straddles a separate selected peak whereby the map of each unknown pattern is defined in a separate one of said grid matrix portions;

means for identifying said unknown patterns with reference to known patterns of said set, said identifying means including:

means for storing a pattern map and a care map respectively in said second storage means for each of said known patterns;

means for comparing the pattern map of a first one of said succession of unknown patterns with the pattern map of a first known pattern to determine identities between correspondingly positioned area elements in said compared maps;

means for comparing the identical elements so determined with correspondingly located elements of the care map of said first known pattern to determine identities there between, the number of elements determined to be identical by said last-recited comparing means constituting a correlation index;

means including both said previously recited comparing means for successively comparing said first unknown pattern with the remaining known patterns of said set to provide a correlation index for each such comparison;

means for selecting the largest and second largest ones of said correlation indices;

means for storing in said second storage means respectively, a predetermined correlation threshold, a predetermined minimum difference threshold, and the difference in magnitude between the largest and second largest ones of said correlation indices;

means for comparing said largest correlation index to said correlation threshold;

means responsive to said last-recited comparing means if said correlation threshold is exceeded for comparing said difference in magnitude to said minimum difference threshold;

means responsive to said last-recited comparing means if said minimum difference threshold is exceeded for storing a standard code for said first unknown pattern representative of the known pattern that produced said largest correlation index upon comparison; and

means for storing an error code if either one of said thresholds is larger than the quantity compared thereto;

whereby said system is further adapted to read out the remaining stored for each identified pattern, and an error code is stored for each pattern which remains unidentified.

4,499,596

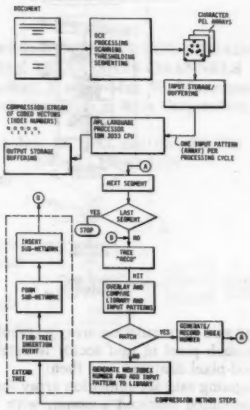
ADAPTIVE FACSIMILE COMPRESSION USING A DYNAMIC EXTENDABLE DECISION NETWORK

Richard G. Casey, Morgan Hill, and Theodore D. Friedman, San Francisco, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,839

Int. Cl.³ G06K 9/62

U.S. Cl. 382—37 **5 Claims**



1. A method for adaptively assigning index numbers to each one of a set of input PEL array patterns in a system formed from a scanner for elucidating input array patterns, a memory for storing pograms and data including a library of at least one pattern, output means, and a processor intercoupling the scanner, memory and output means, and responsive to the programs for operating upon the data, comprising the steps of:

preclassifying an input pattern provided by the scanner according to one of the patterns in the library using color values in the input pattern at each location specified by a decision tree node in order to determine a successor node in a root-to-leaf node direction until terminating in an index number designating a library pattern;

comparing the designated library pattern with the input and either

upon a match, generating an index number and processing the next input pattern; or

upon a mismatch, generaing a new index number, adding the input pattern to the library in the memory, and extending the decision tree; and

processing the next input pattern.

4,499,597

SMALL-OBJECT LOCATION UTILIZING CENTROID ACCUMULATION

James F. Alves, Chatsworth, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Mar. 29, 1982, Ser. No. 363,318

Int. Cl.³ G06K 9/52

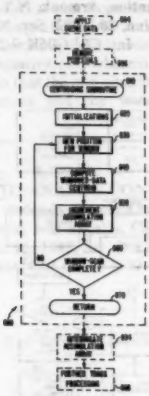
U.S. Cl. 382—41 **4 Claims**

1. In a scene-sensing and imaging system having data-analysis apparatus which includes (a) an array for storing a given pixel-based scene image, (b) window gating networks associated with said image-storage array, and (c) an accumulation array, a method of operating said data-analysis apparatus so as to locate smaller-dimensioned objects in predetermined sectors of said given image, this method comprising the steps of:

(A) utilizing said gating networks both to establish at least one processing window dimensioned with respect to desired small objects in said scene, and then to read out of

said image array each dimensioned-window grouping of pixels in said image sector;

(B) for each such dimensioned-window pixel grouping, determining which pixel is the intra-window image centroid;



(C) utilizing said accumulation array to tabulate the number of times each pixel in said sector is determined to be a windowed-pixel centroid; and then

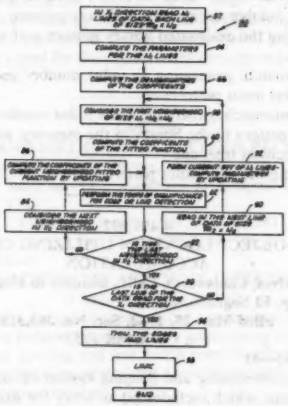
(D) interrogating said accumulation array for a pixel having a high tabulated centroid account, with any such pixel being the location of smaller-demensioned objects in said scene.

4,499,598

EDGE AND LINE DETECTION IN MULTIDIMENSIONAL NOISEY, IMAGERY DATA

Chittibabu Chittineni, Ponca City, Okla., ass. nor to Conoco Inc., Ponca City, Okla.

Filed Jul. 2, 1982, Ser. No. 394,674
Int. Cl.³ G06K 9/56
U.S. Cl. 382—54 **6 Claims**



1. A machine process for analysis of multidimensional data for detection of edge and line distinctions, comprising the steps of:

inputting multidimensional digital image data of line dimension $m_1 \times m_2 \times N_3$ wherein m_1 and m_2 are the horizontal coordinate values of a rectangular pixel array and N_3 is the respective vertical coordinate value;

compute parameters for image values for a selected N_1 of said m_1 lines of data of size $m_2 \times N_3$ and determine denominators of coefficients for a fitting hyper surface wherein $N_1 \times N_2 \times N_3$ defines a selected neighborhood of multidimensional pixels within the coordinates $m_1 \times m_2 \times N_3$;

examine a first pixel neighborhood of data of $N_1 \times N_2 \times N_3$ dimension and compute coefficients of the fitting hypersurface;

continue examining and computing said coefficients of the fitting hypersurface for successive, overlapping pixel neighborhoods of $N_1 \times N_2 \times N_3$ across lines N_1 and successively through all sequential lines N_1 of said m_1 lines of data;

perform tests for significance of magnitude and direction of each successive pixel neighborhood $N_1 \times N_2 \times N_3$ to derive edge and line data; and

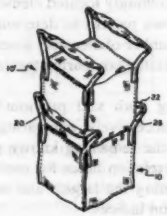
outputting a visual display of selected edge and line data.

4,499,599

STACKABLE FLEXIBLE BULK CONTAINER

Walter J. Polett, and Muriel S. Polett, both of 61 Algonquin Trail, Medford Lakes, N.J. 08055

Filed Jan. 3, 1983, Ser. No. 455,194
Int. Cl.³ B65D 33/02, 33/06, 88/22
U.S. Cl. 383—6 **5 Claims**



1. A stackable flexible bulk container comprising:

a bag portion including a bottom, a top wall and an encircling side wall connected to said bottom and top wall and defining the outer perimeter of said bag portion;

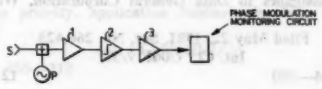
a pair of lifting strap loops, each of said loops having a pair of ends secured to said bag portion so that said loops can extend above said top wall, and

means for maintaining the substantial portion of said loops in an upward position above the level of said top wall and outwardly beyond the outer perimeter of said bag portion, said maintaining means comprising a substantially vertical relatively rigid member associated with each end of each of said loops, each of said rigid members being secured to said bag portion and extending diagonally upwardly above the level of said top wall and outwardly beyond the maximum dimensions of said bottom whereby a second similarly constructed container can be stacked on top of the bag portion without substantially interfering with said loops, each of said loops including a substantially horizontally disposed flexible material bight portion extending between the upper ends of two of said rigid members.

4,499,600
SUPERVISION OF TRANSMISSION SYSTEMS

William H. Powell, Sawbridgeworth, England, and Hugo F. J. Witters, Berlaar, Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 278,133, Jun. 29, 1981, abandoned. This application Apr. 27, 1983, Ser. No. 487,237
Claims priority, application United Kingdom, Aug. 26, 1980, 8027564
Int. Cl.³ H04B 9/00
U.S. Cl. 455—9 10 Claims



5. A repeater for use in a communications transmission system in which signals propagate in a predetermined direction in a transmission path from a transmitting to a receiving terminal, comprising

at least one component performing a non-linear function on the signal reaching the same in the transmission path;

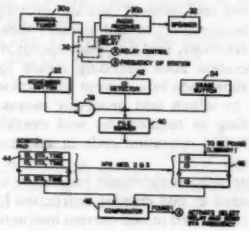
means for generating a pilot signal and summing the same in the repeater at a point situated ahead of said one component as considered in the predetermined direction with the incoming signal propagating in the transmission path toward said repeater and having a predetermined frequency for combining with said incoming signal prior to the performance of the non-linear function on the combined signal in said one component, said pilot signal having such a frequency that said combined signal has a frequency component close to but different from said predetermined frequency, with attendant phase modulation of the outgoing signal leaving the repeater; and

means for transmitting said outgoing phase-modulated signal into the transmission path for propagation toward the receiving terminal without any further change in said outgoing signal at said repeater so that the phase modulation of said outgoing signal is preserved even when the repeater is operating properly and for monitoring the phase of said outgoing phase modulation signal at the receiving terminal.

4,499,601
METHOD AND APPARATUS FOR AUTOMATICALLY DETECTING AND PLAYING DESIRED AUDIO SEGMENTS OVER A BROADCAST RECEIVER.

Gordon H. Matthews, 2428 Trellis, Plano, Tex. 75075

Filed Oct. 18, 1982, Ser. No. 434,868
Int. Cl.³ H03J 7/18; H04B 1/16
U.S. Cl. 455—166 32 Claims



1. A method for detecting and playing desired audio segments over a broadcast receiver comprising:

selecting and storing representations of a first portion of a plurality of desired audio segments being broadcast on a plurality of stations being received by the receiver;

detecting the occurrence of an audio portion that corresponds to one of said stored first portions on one of the plurality of stations being received by the receiver;

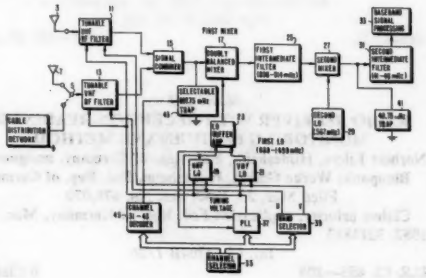
switching the receiver to the station upon which the corresponding audio portion is detected, and

broadcasting the remaining portion of the audio segment on the station over the receiver.

4,499,602
DOUBLE CONVERSION TUNER FOR BROADCAST AND CABLE TELEVISION CHANNELS

Gilbert C. Hermeling, Jr., and Max W. Muterspaugh, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 28, 1983, Ser. No. 508,595
Int. Cl.³ H04B 1/26
U.S. Cl. 455—180 20 Claims



1. A tuning arrangement capable of tuning broadcast UHF and broadcast and cable VHF RF television signals, each including respective modulated picture and sound carriers, in a substantially continuous frequency range corresponding to respective television channels provided at respective UHF and VHF inputs comprising:

first frequency converter means coupled to said UHF and VHF inputs for converting the RF television signal corresponding to a selected channel to a first intermediate signal in the RF frequency range of a predetermined UHF television channel which is not used for the broadcast transmission of television information;

RF coupling means coupled to said UHF and VHF inputs for coupling said UHF and VHF RF television signals to said first frequency converter;

first filter means;

said RF coupling means and said first frequency converter means being susceptible to coupling the RF signals corresponding to the upper and lower adjacent UHF television channels immediately above and below, respectively, said unused UHF television channel to said first filter means even when another one of said television channels is selected;

said first filter means having a passband filter characteristic selected to pass the picture and sound carriers of said first intermediate signal corresponding to said selected channel but to relatively attenuate the picture carrier of said RF signal corresponding to said upper adjacent UHF television channel for producing a filtered first intermediate signal;

second frequency converter means for converting said filtered first intermediate to a second intermediate signal in a predetermined IF frequency range; and

second filter means having a passband characteristic selected to pass the picture and sound carriers of said second filtered intermediate signal corresponding to said selected

television channel but to relatively attenuate said sound carrier of said RF signal corresponding to said lower adjacent UHF television channel in frequency as converted to said predetermined IF frequency range by said second frequency conversion means for producing a second filtered intermediate signal.

4,499,603

RADIO RECEIVER WITH RECEPTION-READINESS MONITORING FEATURE AND METHOD

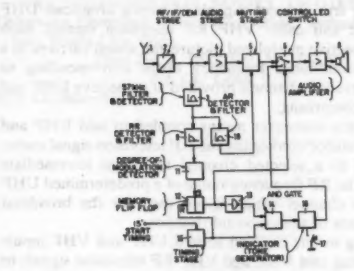
Norbert Eilers, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 478,070

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211813

Int. Cl.³ H04B 1/26

U.S. Cl. 455—205 **6 Claims**



6. In a radio signalling system, in which a radiated carrier wave is frequency modulated with both on intelligence signal and an amplitude modulated subcarrier (57 kHz),

wherein the subcarrier is amplitude modulated, selectively, with a region recognition (RR) frequency signal in a first low frequency range, and an announcement recognition (AR) frequency signal in a seond low frequency range,

and wherein when the AR modulation frequency signal is impressed on the sub-carrier, the degree of modulation of the RR frequency signal responsively decreases.

a method comprising the steps of

recognizing the degree of modulation of the RR frequency signal, and providing an RR change output signal if the degree of modulation changes abruptly;

storing a representation of an abrupt change of modulation degree of the RR frequency signal;

detecting the presence or absence of said stored representation within a predetermined time period;

and providing an output indication signal if no such representation is present within the time period.

4,499,604

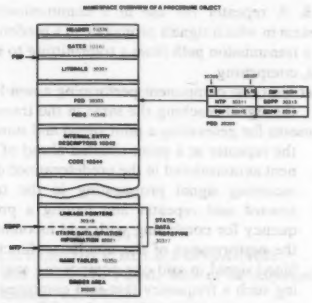
DIGITAL DATA PROCESSING SYSTEM FOR EXECUTING INSTRUCTIONS CONTAINING OPERATION CODES BELONGING TO A PLURALITY OF OPERATION CODE SETS AND NAMES CORRESPONDING TO NAME TABLE ENTRIES

Gerald F. Clancy, Saratoga, Calif.; Ronald H. Gruner, Cary, N.C.; Stephen I. Schleimer, Chapel Hill, N.C.; Craig J. Mundie, Cary, N.C.; Steven J. Wallach, Saratoga, Calif.; Walter A. Wallach, Jr., Raleigh, N.C.; John K. Ahlstrom, Mountain View, Calif.; Michael S. Richmond, Pittsboro, N.C.; David H. Bernstein, Ashland, and Richard G. Bratt, Wayland, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,423

Int. Cl.³ G06F 9/30

U.S. Cl. 364—200 **12 Claims**



1. A digital computer system comprising:

(1) memory means for performing memory. operations including storing and providing items of data in response to memory operation specifiers, each one of said memory operation specifiers specifying one said memory operation and an address of one said item of data in said memory means, and wherein said items include

(A) instructions, each one of said instructions including an operation code of a plurality of operation codes, said operation codes belonging to a plurality of functionally different operation code sets, said operation codes in a given one of said operation code sets being definable solely with reference to said given operation code set, and certain ones of said instructions further including names representing other said items and

(B) name table entries corresponding to said means, each said corresponding name table entry containing information specifying said address of said item represented by said name to which said name table entry corresponds and

(2) processor means connected to said memory means for processing said items of data and providing said memory operation specifiers to said memory means in response to said instructions, said processor means including

(A) operation code decoding means for decoding said operation code in a current instruction of said instructions to which said processor means is currently responding as required by said operation code set to which said operation code in said current instruction belongs,

(B) name processing means responsive to any said name contained in said current instruction for receiving said name contained in said current instruction and resolving said received name to produce said address of said represented item specified by said corresponding name table entry, and

(C) control means responsive to said operation code decoding means and to said name processing means for

controlling operation of said processor means and providing said memory operation specifiers including said address produced by said name processing means to said memory means.

4,499,605

FM-RECEIVER USING A RATIO DETECTOR WITH SILICON DIODES

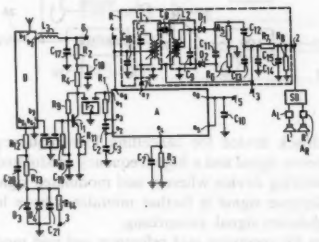
Arnoldus Garskamp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1982, Ser. No. 435,145

Claims priority, application Netherlands, Nov. 13, 1981, 8105147

Int. Cl.³ H04B 1/16

U.S. Cl. 455—210 **3 Claims**



1. An FM-receiver comprising an FM-channel coupled to an aerial input for receiving an FM signal, the FM-channel comprising in succession an RF-input stage, a mixer stage, an IF-circuit having an IF bandwidth and a ratio detector, the ratio detector including silicon detector diodes for detection of the FM signal and a smoothing capacitor conductively connected to said diodes for a dynamic amplitude limitation of the ratio detector output signal in dependence on the amplitude of the ratio detector input signal, characterized in amplifier means for adjusting the total gain of the FM signal between the aerial input and the ratio detector, and generating an average noise voltage from a noise component of the FM signal within the IF bandwidth, said average noise voltage corresponding to a threshold voltage of the silicon detector diodes, said amplifier means applying the average noise voltage to the silicon detector diodes to produce an average noise current in the silicon detector diodes at least equal to a forward current of the silicon detector diodes, the average noise current producing a d.c. voltage deviating from zero across the smoothing capacitor.

4,499,606

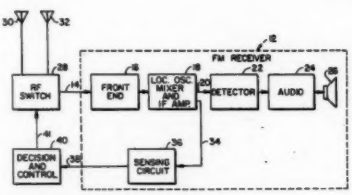
RECEPTION ENHANCEMENT IN MOBILE FM BROADCAST RECEIVERS AND THE LIKE

William R. Rambo, Stanford, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Dec. 27, 1982, Ser. No. 453,470

Int. Cl.³ H04B 7/08, 1/10

U.S. Cl. 455—277 **28 Claims**



28. In a diversity receiver having at least two antennas, antenna switching means for switching the receiver system from one antenna to the other,

sensing means for producing a control signal related to the amplitude of the received signal, multipath disturbances in the received signal such as frequency selective fading being manifested in said control signal,

means for setting a reference threshold voltage, and

comparing/peak level detector means responsive to the control signal and the reference threshold voltage and having first and second outputs for activating said switching means and for momentarily resetting the reference threshold voltage to a level related to the control signal, respectively.

4,499,607

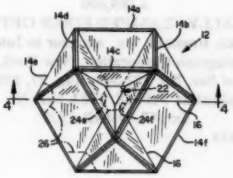
GEOMETRICALLY-INTEGRATED ARCHITECTURE OF MICROCIRCUITS FOR HIGH-SPEED COMPUTERS

David M. Higgins, 346 Palouse, Walla Walla, Wash. 99362

Filed Sep. 13, 1982, Ser. No. 417,508

Int. Cl.³ H04B 9/00

U.S. Cl. 455—606 **20 Claims**



1. An electronic circuit chip for use in combination with a second said chip in a circuit physically configured as a geometrical solid, the chip comprising:

a planar substrate having a broad face and a straight edge face;

an electronic circuit on the broad face; and

connecting means disposed along the edge face for electrically connecting the circuit to a second circuit on the second chip;

said edge face being formed to mate with a complementary edge face of said second chip to interconnect said chips edge to edge at an angle such that the broad faces of the chips are angularly spaced apart and vertices orient towards the center of said geometrical solid.

4,499,608

TERMINAL DEVICE HAVING CLOSED CHAMBER COMMUNICATIONS BETWEEN FUNCTIONAL UNITS

Eric C. Broockman; Robert T. Cato, both of Raleigh, and Robert C. Lynch, Cary, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 12, 1983, Ser. No. 457,531

Int. Cl.³ H04B 9/00

U.S. Cl. 455—607 **16 Claims**

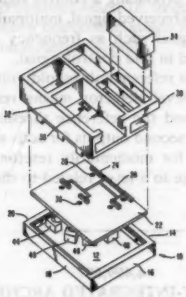
1. A data processing terminal characterized by:

a substantially enclosed chamber having interior walls;

a plurality of functional units mounted outside the substantially enclosed chamber, each of said functional units having a transducer for injecting radiation into and for receiving radiation from the chamber through optical openings in a first wall thereof; and

a plurality of radiation reflectors extending from a second wall toward the first wall, with the transducer for each functional unit being placed at the focal point of the re-

spective reflector whereby said reflectors direct injected radiation along predetermined paths within the chamber



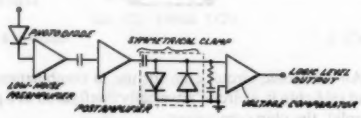
so that absorption and scattering losses resulting from multiple reflections are being minimized.

4,499,609

SYMMETRICALLY CLAMPED FIBER OPTIC RECEIVER

Willis M. Muska, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 181,585, Aug. 27, 1980, abandoned.
This application Feb. 28, 1983, Ser. No. 470,755
Int. Cl.³ H04B 9/00
U.S. Cl. 455—619 **6 Claims**



1. An optical receiver comprising

photodetector means operative for converting a received optical signal into an electrical output signal;

fixed gain amplifying means for amplifying said output signal of said photodetector means and issuing an amplified output signal;

complementary clamping means having an input receiving said amplified output signal of said amplifying means and an output, and operative for clamping said amplified output signal to a respective one of two potential levels depending on whether said amplified output signal is above or below a predetermined potential level situated intermediate said two two potential levels and for issuing a clamped output signal at said output thereof; and

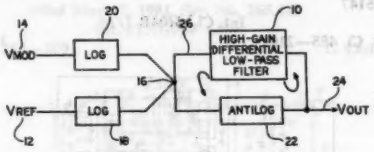
means for quantizing said clamped output signal of said complementary clamping means.

4,499,610

FEEDBACK SYSTEM WITH AUTOMATIC GAIN CONTROL ACTION

Thomas W. Miltonberger, Grayslake, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 30, 1983, Ser. No. 509,751
Int. Cl.³ H04B 9/00
U.S. Cl. 455—619 **4 Claims**



1. A feedback device for cancelling low-frequency noise from a reference signal and a high frequency modulated signal from a monitoring device wherein said modulated signal and/or said reference signal is further modulated by a low-frequency modulation signal, comprising:

first means for receiving said reference and said modulated signals and for producing a first signal which is a logarithmic value of one of said reference signal or said modulated signal and a second signal which is a negative logarithmic value of the other of said reference signal or said modulated signal; and

a summing junction operatively connected to said first means, said summing junction receiving said first and second signals from said first means and producing a logarithmic difference signal therefrom; and

a feedback loop in electrical connection with said summing junction, said loop having an antilog means for receiving at least said logarithmic difference signal and producing an antilog signal therefrom, and a high-gain differential, low-pass filter for receiving said antilog signal on an input thereof and filtering any high-frequency portion contained therein to present a third signal to said summing junction, said third signal being out of phase with said logarithmic difference signal by 180 degrees;

wherein said antilog signal is an output signal which is related to the ratio of said modulated signal to said reference signal and wherein any low frequency modulation in said modulated and/or reference signals has been substantially removed from said output signal so that the high frequency modulated signal can be measured.

DESIGN PATENTS

GRANTED FEB. 12, 1985

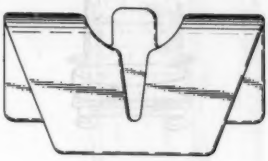
ERRATA

For CLASS	See PATENT NO.
D07–405	277,523
D34–017	277,532
D13–003	277,541

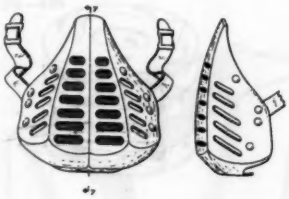
DESIGNS

FEBRUARY 12, 1985

277,519
WEIGHTLIFTER'S VEST
Ira J. Silberman, Opelika, Ala., assignor to Diversified Products Corporation, Opelika, Ala.
Filed Sep. 29, 1982, Ser. No. 428,366
Term of patent 14 years
U.S. Cl. D2—27



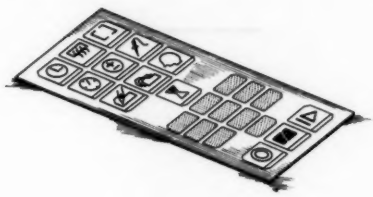
277,520
FACE GUARD
John R. Gregory, 303 W. 35th St., Suite C, National City, Calif. 92054
Filed Sep. 30, 1982, Ser. No. 429,560
Term of patent 14 years
U.S. Cl. D2—233



277,521
CAP STRETCHER
Victor B. Nasby, P.O. Box 127, Waldron, Ind. 46182
Filed Jul. 12, 1982, Ser. No. 397,541
Term of patent 14 years
U.S. Cl. D2—262

277,522
PROTECTIVE CONTAINER FOR A COMPUTER FLOPPY DISK
Joseph Pritzker, 15016 San Feliciano Dr., La Mirada, Calif. 90638
Filed Aug. 9, 1982, Ser. No. 406,399
Term of patent 14 years
U.S. Cl. D3—35

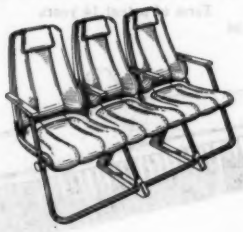
277,523
LABEL FOR A MICROWAVE OVEN CONTROL PANEL
Joo H. Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea
Filed Aug. 30, 1982, Ser. No. 413,088
Claims priority, application Rep. of Korea, Mar. 20, 1982, 1982-2422
Term of patent 14 years
U.S. Cl. D7—405



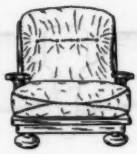
277,524
FLOOR BRUSH
Matthew D. Kubick, Poland, N.Y., assignor to Perfex Corporation, Poland, N.Y.
Filed Nov. 17, 1982, Ser. No. 442,279
Term of patent 14 years
U.S. Cl. D4—134

277,525
CHAIR
Randall P. Buhk, Wyoming; Kenneth W. Hozeski, Grandville, and Alex Karrip, Grand Rapids, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Nov. 5, 1979, Ser. No. 91,540
The portion of the term of this patent subsequent to Feb. 8, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366

277,526
VEHICLE SEAT OR THE LIKE
Thomas H. White, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 29, 1982, Ser. No. 426,496
Term of patent 14 years
U.S. Cl. D6—356



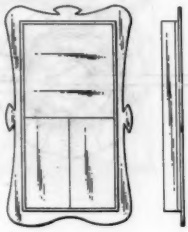
277,527
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altena Salotti S.n.c., Cabiate, Italy
Filed Sep. 3, 1982, Ser. No. 414,684
Claims priority, application Italy, Mar. 9, 1982, 21079/82[U]
Term of patent 14 years
U.S. Cl. D6—379



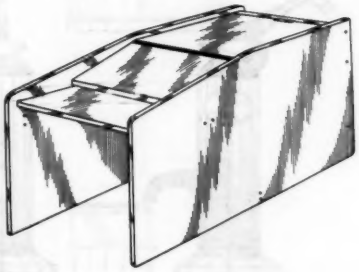
277,528
TISSUE PAPER HOLDER
Polyn Spirtos, 11939 Gorham Ave., Los Angeles, Calif. 90049
Filed Feb. 22, 1983, Ser. No. 468,335
Term of patent 14 years
U.S. Cl. D6—518

277,529
MIRROR CABINET
Winfried Scholl, Düsseldorf, Fed. Rep. of Germany, assignor to Hewi GmbH, Arolsen, Fed. Rep. of Germany
Filed Sep. 11, 1981, Ser. No. 301,435
Term of patent 14 years
U.S. Cl. D6—561

277,530
WALL MOUNTED BAR
Danstan R. Hutchinson, 318 Carteret Ter., Orange, N.J. 07050
Continuation-in-part of Ser. No. 256,979, Apr. 23, 1981, abandoned. This application Jan. 3, 1984, Ser. No. 567,935
Term of patent 14 years
U.S. Cl. D6—561

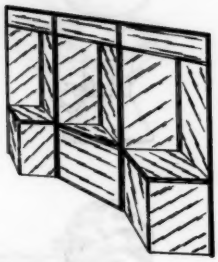


277,531
VISUAL DISPLAY UNIT DESK
Kenneth R. Moon, 140-150 Lambton Quay, Wellington, New Zealand
Filed Aug. 3, 1981, Ser. No. 289,131
Claims priority, application New Zealand, Feb. 16, 1981, 16968
Term of patent 14 years
U.S. Cl. D6—420

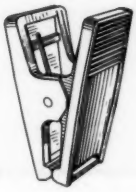


277,532
MOBILE DISPLAY COUNTER
Jean-Pierre Duhamel, 10 Deneuve St., Ville Lorraine, Quebec, Canada (J6Z 1W9)
Filed Jun. 14, 1982, Ser. No. 387,806
Term of patent 14 years
U.S. Cl. D34—17

277,533
DISPLAY STAND
Melvin M. Miller, Bloomington, Ind., assignor to Channel-Kor Systems Inc., Bloomington, Ind.
Filed Jun. 18, 1982, Ser. No. 389,578
The portion of the term of this patent subsequent to Dec. 11, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—470



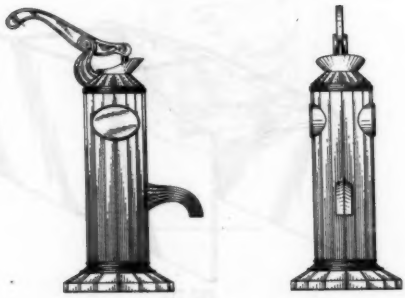
277,534
GARMENT CLIP
John Warmath, Brooklyn, N.Y., assignor to S.M.S. Plastics Corp., Chicago, Ill.
Filed Aug. 31, 1983, Ser. No. 528,037
Term of patent 14 years
U.S. Cl. D6—328



277,535
MUG
Dick G. Langer, 1001 Main St., Venice, Calif. 90291, and Charles H. Feltman, 943½ 17th St., Santa Monica, Calif. 90403
Filed Nov. 15, 1982, Ser. No. 441,616
Term of patent 14 years
U.S. Cl. D7—9

277,536
KNIFE HANDLE
Albert Baer, New York, N.Y., assignor to Imperial Knife Associated Companies, Inc., New York, N.Y.
Filed Nov. 8, 1982, Ser. No. 439,794
Term of patent 14 years
U.S. Cl. D7—152

277,537
PUMP DISPENSER FOR A BEVERAGE OR THE LIKE
Milton J. Merl, New York, N.Y., and Maurice Assouline, Shelton, Conn., assignors to Marlboro Marketing Incorporated, New York, N.Y.
Filed Jun. 21, 1982, Ser. No. 390,589
Term of patent 14 years
U.S. Cl. D7—301

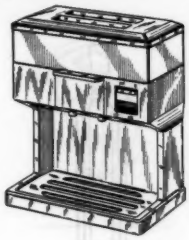


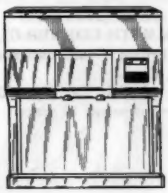
277,538

COFFEE MAKER

Alister Jack, Grijpskerk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1982, Ser. No. 378,561
Claims priority, application Benelux, Nov. 25, 1981, 56322-00
Term of patent 14 years
U.S. Cl. D7—309



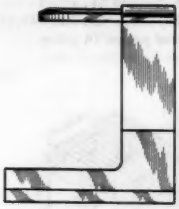


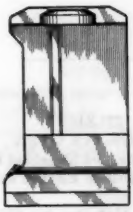
277,539

COFFEE MAKER

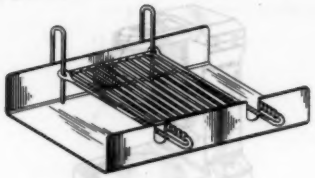
Marten F. Elkerbout, Peize, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 28, 1982, Ser. No. 393,202
Claims priority, application Benelux, Jan. 6, 1982, 56438-01
Term of patent 14 years
U.S. Cl. D7—309



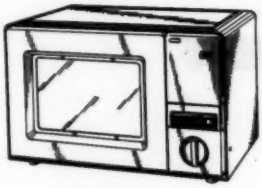


277,540
BARBECUE GRILL OR THE LIKE
Robert J. Thomas, and Craig R. Thomas, both of Cherokee, Iowa, assignors to R. J. Thomas Manufacturing Company, Cherokee, Iowa
Filed Apr. 1, 1982, Ser. No. 364,503
Term of patent 14 years
U.S. Cl. D7—337



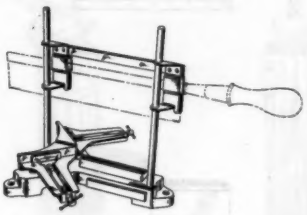
277,541
CHARCOAL BARBECUE GRILL
Henry M. Espinda, 2413 Aniuniu St., Pearl City, Hi. 96782
Filed Nov. 19, 1982, Ser. No. 443,152
Term of patent 14 years
U.S. Cl. D13—3

277,542
MICROWAVE OVEN
Taiji Nanbu; Akira Takebata, and Shigefumi Inoue, all of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 5, 1982, Ser. No. 375,257
Claims priority, application Japan, Dec. 9, 1981, 56-54753
Term of patent 14 years
U.S. Cl. D7—351

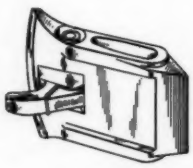


277,543
BOTTLE OR SIMILAR ARTICLE
Serge Mansau, Paris, France, assignor to Lever Brothers Co., New York, N.Y.
Filed Jun. 3, 1982, Ser. No. 384,464
Claims priority, application France, Dec. 1, 1981, 814124
Term of patent 14 years
U.S. Cl. D9—370

277,544
MITRE BOX WITH CORNER CLAMPS
Joseph P. DeCarolis, Bristol, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Mar. 22, 1982, Ser. No. 360,070
Term of patent 14 years
U.S. Cl. D8—71

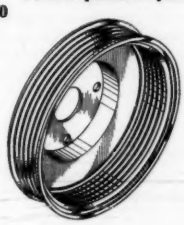


277,545
WOOD-SPLITTING AXE
F. Craig Newmeyer, Niles, and Keith E. Dunbar, Cortland, both of Ohio, assignors to Warren Tool Corporation, Warren, Ohio
Filed Mar. 8, 1982, Ser. No. 356,129
Term of patent 14 years
U.S. Cl. D8—76



277,546
TABLE SKIRT MOUNTING CLIP
Carmen Trotta, Oak Brook, Ill., assignor to Midwest Marko, Inc., Chicago, Ill.
Filed May 5, 1982, Ser. No. 374,966
Term of patent 14 years
U.S. Cl. D8—349

277,547
POLY-V PULLEY
Yukio Kanemitsu, Kobe, Japan, assignor to Goshi Kaisha Kanemitsu Doko Yosetsu-Sho, Japan
Filed Jun. 8, 1982, Ser. No. 386,299
Claims priority, application Japan, Dec. 16, 1981, 56-55943
The portion of the term of this patent subsequent to Jan. 4, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—360

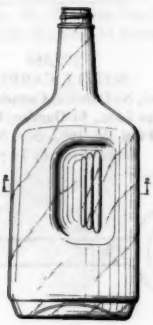


277,548
CHAIN CONNECTOR
Odd Halsnes, Måstad, 1866 Båstad, Norway
Filed Nov. 5, 1982, Ser. No. 439,428
Claims priority, application Norway, May 7, 1982, 62921
Term of patent 14 years
U.S. Cl. D8—499

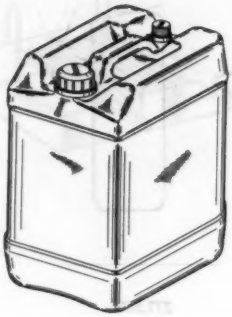
277,549
SPRAY DISPENSER
Carlos M. Martinez, Barcelona, Spain, assignor to Monturas Y Fornituras, S.A., Barcelona, Spain
Filed Jul. 2, 1982, Ser. No. 394,512
Claims priority, application Spain, Feb. 9, 1982, 101146
Term of patent 14 years
U.S. Cl. D9—300

277,550
JAR
Paul R. Campbell; Robert E. Dilgard, Jr., and William J. O'Neil, Jr., all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 13, 1982, Ser. No. 416,806
Term of patent 14 years
U.S. Cl. D9—349

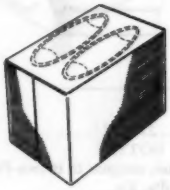
277,551
BOTTLE
Jayne K. Kerr, Toledo, Ohio, assignor to Brown-Forman Distillers Corporation, Louisville, Ky.
Filed Jan. 11, 1983, Ser. No. 457,303
Term of patent 14 years
U.S. Cl. D9—367



277,552
CONTAINER FOR LIQUIDS
Eduard R. Kiing, Oberwil, Switzerland, assignor to Ciba-Geigy AG., Basel, Switzerland
Filed May 10, 1982, Ser. No. 376,880
Claims priority, application Switzerland, Nov. 19, 1981, DM/001027
Term of patent 14 years
U.S. Cl. D9—376



277,553
DISPENSING CARTON FOR SHEET MATERIAL
John M. Ito, Cheltenham, Canada, and James D. Cotton, Livonia, Mich., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 1, 1982, Ser. No. 364,388
Term of patent 14 years
U.S. Cl. D9—416



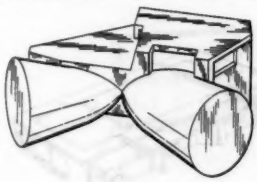
277,554
BOTTLE CARRIER
Jean-Marie Chabot, St-Damien, Canada, assignor to Les Industries Provinciales Ltee., St-Damien, Canada
Filed Jul. 26, 1982, Ser. No. 401,907
Term of patent 14 years
U.S. Cl. D9—434

277,555
FORM FOR SUPPORTING PLASTIC BAGS
John W. Pattillo, 1038 Lancelot Dr., Norcross, Ga. 30071, and William S. Pritchard, 1011 McLynn Ave., Atlanta, Ga. 30306
Filed Aug. 25, 1982, Ser. No. 411,288
Term of patent 14 years
U.S. Cl. D9—434

277,556
COMBINED CLOCK AND PAPER CLIP HOLDER
Chris J. Pappas, Grand Rapids, Mich., assignor to Comus, Inc., Grand Rapids, Mich. and Vorca Corporation, Taipei, Taiwan
Filed Dec. 27, 1982, Ser. No. 453,532
Term of patent 14 years
U.S. Cl. D10—2

277,557
BORE GAUGE
Joseph W. Lenceski, Greenfield, Ind., assignor to Standard Locknut & Lockwasher Inc., Indianapolis, Ind.
Filed Jul. 19, 1982, Ser. No. 399,835
Term of patent 14 years
U.S. Cl. D10—73

277,558
SMOKE DETECTING PHOTOELECTRIC SENSING CHAMBER
John Mallory, Mississauga, Canada, assignor to Isotec Industries Limited, Toronto, Canada
Filed Jan. 24, 1983, Ser. No. 460,396
Term of patent 14 years
U.S. Cl. D10—106



277,559
NECKLACE OR SIMILAR ARTICLE
Laura J. Mackie, 2620 Oxford, Troy, Mich. 48084
Filed Aug. 16, 1982, Ser. No. 408,069
Term of patent 14 years
U.S. Cl. D11—6

277,560
FIGURINE OF A SPANIEL DOG
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Sep. 21, 1981, Ser. No. 303,981
Term of patent 14 years
U.S. Cl. D11—158

277,561
WHEELED WALKER
Ronald Erfurth, 880 N. Main St., Oregon, Wis. 53575
Filed Mar. 29, 1982, Ser. No. 362,758
Term of patent 14 years
U.S. Cl. D12—130

277,562

VEHICLE TIRE

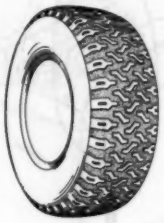
Junichi Kawajiri; Toshio Hayakawa, both of Tokyo, and Hideaki Nishio, Saitama, all of Japan, assignors to Bridgestone Tire Company, Ltd., Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,336

Claims priority, application Japan, Dec. 23, 1981, 56-56642

Term of patent 14 years

U.S. Cl. D12—149



277,563

COMBINED RADIO RECEIVER AND TAPE RECORDER

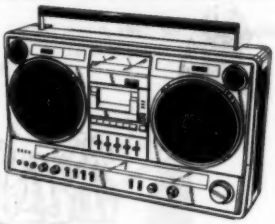
Shinzo Murakami, Osaka; Katsutoshi Kido, Kyoto, and Benito Mishiro, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 20, 1982, Ser. No. 435,445

Claims priority, application Japan, Apr. 20, 1982, 57-17203

Term of patent 14 years

U.S. Cl. D14—5



277,564

COMBINED TAPE RECORDER AND RADIO RECEIVER

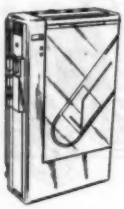
Akio Ohno, and Masanori Hamada, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 12, 1982, Ser. No. 441,012

Claims priority, application Japan, May 12, 1982, 57-20685

Term of patent 14 years

U.S. Cl. D14—5



277,565

COMBINED TAPE RECORDER AND RADIO RECEIVER

Shinzo Murakami, Osaka, and Katsutoshi Kido, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 12, 1982, Ser. No. 441,328

Claims priority, application Japan, May 12, 1982, 57-20684

Term of patent 14 years

U.S. Cl. D14—5

277,566

TAPE RECORDER

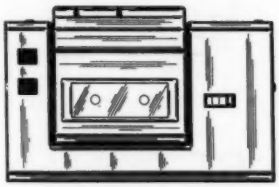
Naoki Wada; Tomitaro Saito, and Takeo Hashiba, all of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 18, 1982, Ser. No. 389,961

Claims priority, application Japan, Dec. 29, 1981, 56-57943

Term of patent 14 years

U.S. Cl. D14—6



277,567

VIDEO TAPE CASSETTE UPPER HALF CASING

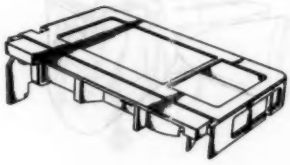
Haruki Ogata, Sagamihara, and Kimio Ogawa, Yokohama, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Nov. 10, 1982, Ser. No. 440,711

Claims priority, application Japan, May 20, 1982, 57-22012

Term of patent 14 years

U.S. Cl. D14—11

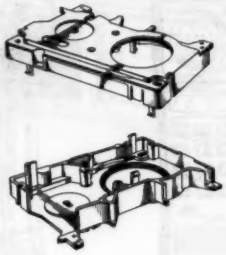


277,568

VIDEO TAPE CASSETTE LOWER HALF CASING

Haruki Ogata, Sagamihara, and Kimio Ogawa, Yokohama, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Nov. 10, 1982, Ser. No. 440,712
Claims priority, application Japan, May 20, 1982, 57-22013
Term of patent 14 years
U.S. Cl. D14—11

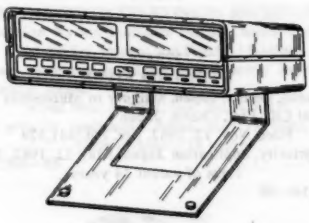


277,569

HOUSING FOR A BUSY LAMP DISPLAY UNIT

Thomas Georgopulos, Clearwater, Fla., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Sep. 1, 1982, Ser. No. 413,932
Term of patent 14 years
U.S. Cl. D14—59

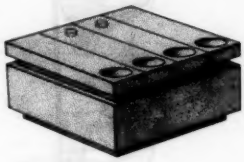


277,570

ADJUNCT KEY TO A TELEPHONE SET OR SIMILAR ARTICLE

Donald M. Genaro, Haworth, N.J.; Norris R. Hall, Indianapolis, Ind.; John N. McGarvey, Drexel Hill, Pa., and Michael T. Skubiak, Carmel, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 1, 1982, Ser. No. 445,905
Term of patent 14 years
U.S. Cl. D14—59

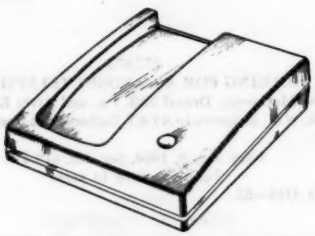


277,571

TELEPHONE INSTRUMENT BASE

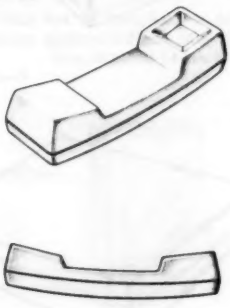
Kenneth R. Cooke, New York, and Vito L. Porcelli, Ossining, both of N.Y., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Jan. 16, 1984, Ser. No. 570,944
Term of patent 14 years
U.S. Cl. D14—60

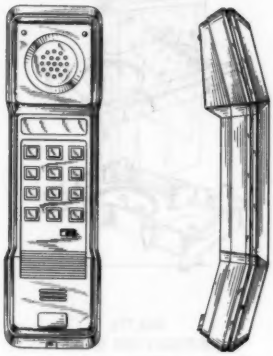


277,572
TELEPHONE SUPPORT
Giovanni Offredi, Milan, Italy, assignor to Gnecchi and Company S.P.A., Milan, Italy
Filed Dec. 16, 1981, Ser. No. 331,292
Claims priority, application Italy, Jun. 17, 1981, 60931/81[U]
Term of patent 14 years
U.S. Cl. D14—61

277,573
HOUSING FOR A HANDSET TELEPHONE
John N. McGarvey, Drexel Hill, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Technologies, Inc., New York, N.Y.
Filed Jun. 8, 1984, Ser. No. 618,478
Term of patent 14 years
U.S. Cl. D14—53

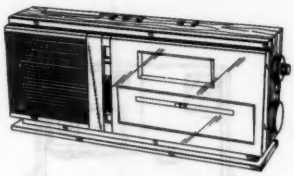


277,574
HANDSET TELEPHONE
Ping M. Lee, Hong Kong, Hong Kong, assignor to Bondwell Electronics Ltd., Kwun Tong, Hong Kong
Filed Jul. 16, 1982, Ser. No. 398,940
Claims priority, application United Kingdom, Mar. 22, 1982, 005736
Term of patent 14 years
U.S. Cl. D14—64



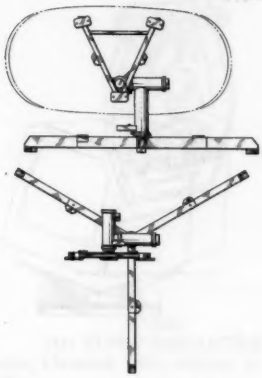
277,575
RADIO RECEIVER
Yoichi Hisano, Osaka, Japan, assignor to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan
Filed Nov. 12, 1982, Ser. No. 441,329
Claims priority, application Japan, May 12, 1982, 57-20680
Term of patent 14 years
U.S. Cl. D14—68

277,576
CLOCK RADIO
Benito Mishiro; Kazuya Ohhashi, and Teruyuki Nishimoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 6, 1982, Ser. No. 433,192
Claims priority, application Japan, Apr. 20, 1982, 57-17212
Term of patent 14 years
U.S. Cl. D14—73

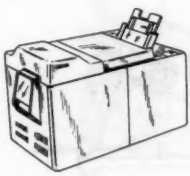


277,577
PROJECTION TELEVISION RECEIVER
Tadashi Sumino, Kyoto; Toshihiro Iyama, Osaka; Yutaka Kono, Osaka; Akishige Sai, Osaka, and Fumioki Ichihara, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 1, 1982, Ser. No. 438,232
Claims priority, application Japan, May 17, 1982, 57-21557
Term of patent 14 years
U.S. Cl. D14—83

277,578
ANTENNA BASE
James D. Nichols, Carmichael, Calif., assignor to Jo[illegible]s Futura Foundation, Ltd., Fair Oaks, Calif.
Filed Jul. 19, 1982, Ser. No. 399,725
Term of patent 14 years
U.S. Cl. D14—91



277,579
DOCUMENT SCANNER
Daniel T. Noonan, Irving, Tex., assignor to The Mead Corporation, Dayton, Ohio
Filed Mar. 8, 1982, Ser. No. 355,802
Term of patent 14 years
U.S. Cl. D14—107



277,580

TILT ROTATE BASE FOR A COMPUTER DISPLAY

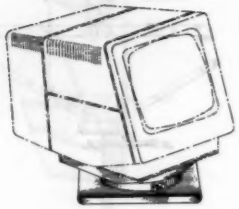
John A. Wiseman, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1981, Ser. No. 322,040

Claims priority, application United Kingdom, May 26, 1981, 1 000 663

Term of patent 14 years

U.S. Cl. D14—114



277,581

CUTTER

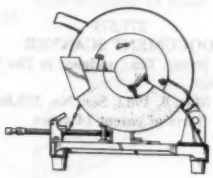
Kouzou Hakoda, Fukuyama, Japan, assignor to Ryobi Limited, Tokyo, Japan

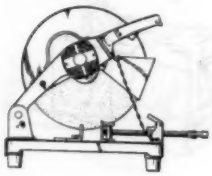
Filed Aug. 13, 1982, Ser. No. 407,776

Claims priority, application Japan, Feb. 15, 1982, 57-6393; Mar. 9, 1982, 57-9734

Term of patent 14 years

U.S. Cl. D15—125





277,582

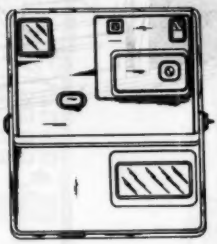
PHOTOGRAPHIC CAMERA WITH INTEGRAL COVER-HANDLE

Andrew V. McClare, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,574

Term of patent 14 years

U.S. Cl. D16—5



277,583

OPTICAL FIBER CONNECTOR

Ichiro Kono, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 536,047, Sep. 26, 1983, abandoned. This application May 16, 1984, Ser. No. 610,186

Claims priority, application Japan, Mar. 25, 1983, 58-12191

Term of patent 14 years

U.S. Cl. D16—130

277,584
SIGN SUPPORT STAND
James W. Annestedt, 2328 Glencliff St., Memphis, Tenn. 38119
Filed Aug. 9, 1982, Ser. No. 406,382
Term of patent 14 years
U.S. Cl. D20—43

277,585
RATTLE
Erik P. Tapdrup, Virum, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Jun. 11, 1982, Ser. No. 387,521
Term of patent 14 years
U.S. Cl. D21—65

277,586
RATTLE
Erik P. Tapdrup, Virum, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Jun. 11, 1982, Ser. No. 387,523
Term of patent 14 years
U.S. Cl. D21—65

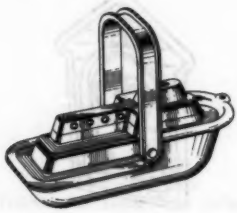
277,587
TOY BUNNY RABBIT RATTLE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,667
Term of patent 14 years
U.S. Cl. D21—65

277,588
TOY PUPPY DOG RATTLE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,668
Term of patent 14 years
U.S. Cl. D21—65

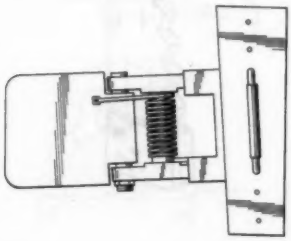
277,589
TOY SAW
Valerie Daugherty, Alta Loma, Calif., assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,831
Term of patent 14 years
U.S. Cl. D21—120

277,590
TOY REFRIGERATOR OR SIMILAR ARTICLE
John W. Spirk, Jr., 2533 Euclid Heights. Blvd., Cleveland Heights, Ohio 44106, and John R. Nottingham, 4875 Stacy Ct., Richmond Heights, Ohio 44143
Filed Jun. 11, 1982, Ser. No. 387,447
Term of patent 14 years
U.S. Cl. D21—122

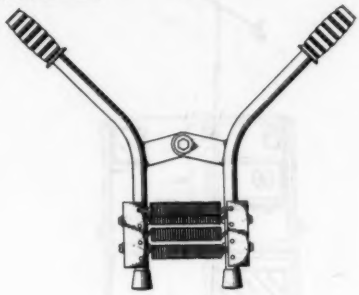
277,591
TOY BOAT
Marc Rivollet, Oxonnax, France, assignor to Etablissments Fernand Berchet, France
Filed Jul. 13, 1981, Ser. No. 282,748
Claims priority, application France, Jan. 12, 1981, 810082
Term of patent 14 years
U.S. Cl. D21—130



277,592
KARATE KICK TRAINING TARGET
Daniel T. Jackson, 16215 Stockbridge Ave., Cleveland, Ohio 44128
Filed Mar. 6, 1981, Ser. No. 238,879
Term of patent 14 years
U.S. Cl. D21—191

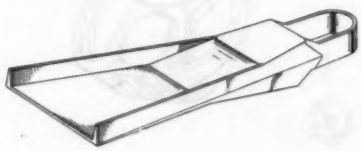


277,593
PHYSICAL EXERCISER
Patrick J. Terrian, 6525 E. Townline Rd., Birch Run, Mich. 48415, and Randy T. Terrian, 2247 Bay St., Saginaw, Mich. 48602
Filed May 5, 1982, Ser. No. 374,994
Term of patent 14 years
U.S. Cl. D21—198

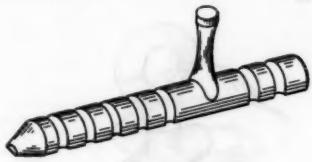


277,594
GOLF PUTTER
Henry M. Mundt, 539 Highview St., Newbury Park, Calif. 91320
Filed Dec. 11, 1981, Ser. No. 329,734
Term of patent 14 years
U.S. Cl. D21—218

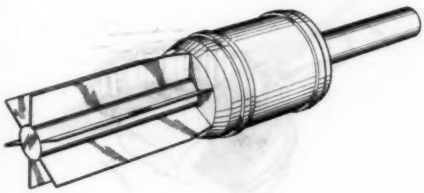
277,595
SWIM FIN
John F. Simpson, 1622 Ponderosa Ave., Costa Mesa, Calif. 92626
Filed Jun. 27, 1983, Ser. No. 508,152
Term of patent 14 years
U.S. Cl. D21—239



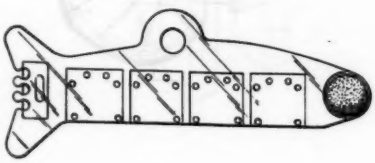
277,596
COMBAT STICK
Mikio Nishiuchi, 4649 N. 81st St., Omaha, Nebr. 68134
Filed Jul. 19, 1982, Ser. No. 399,373
Term of patent 14 years
U.S. Cl. D21—1



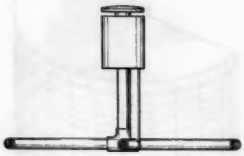
277,597
AMMUNITION PROJECTILE TO BE USED FOR TRAINING PURPOSES
Torsten Wik; Christer Lagerstam; Kurt Pettersson, all of Karlskoga, Sweden, and Kjell Mattsson, San Leandro, Calif., assignors to Aktiebolaget Bofors, Bofors, Sweden
Filed Mar. 18, 1982, Ser. No. 359,623
Term of patent 14 years
U.S. Cl. D22—10

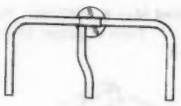


277,598
FISH HOOK HOLDER
Stephen A. Marusak, 537 E. Oak Ridge Ave., New Port Richey, Fla. 33552
Filed Sep. 30, 1982, Ser. No. 431,842
Term of patent 14 years
U.S. Cl. D22—22

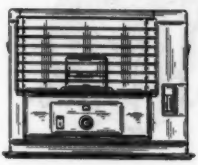


277,599
VACUUM BREAKER ASSEMBLY FOR BIDET
Don C. Arnold, Buffalo Grove, Ill., and Thomas J. Wilcox, East Troy, Wis., assignors to Indiana Brass, Inc., Frankfort, Ind.
Filed May 17, 1982, Ser. No. 379,271
Term of patent 14 years
U.S. Cl. D23—69

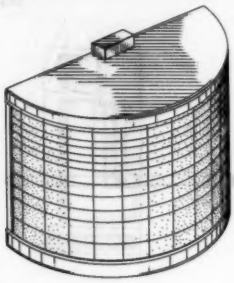




277,600
OIL HEATER
Shigetoshi Hazama; Shuzo Sawa; Matafumi Ikeda, and Akira Esaki, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 7, 1982, Ser. No. 447,710
Claims priority, application Japan, Jun. 9, 1982, 57-25694
Term of patent 14 years
U.S. Cl. D23—123

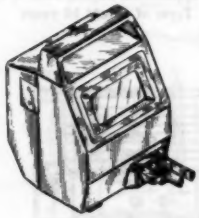


277,601
PRECOOLER FOR AIR CONDITIONING UNIT
Dannial R. Freeman, 326 E. Port Au Prince, Phoenix, Ariz. 85022
Filed Jun. 1, 1982, Ser. No. 383,497
Term of patent 14 years
U.S. Cl. D23—139



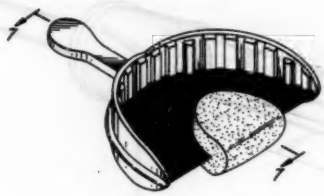
277,602
FLUID DISPENSING PUMP
James A. Benson, Bellevue, and Paul W. Jones, Issaquah, both of Wash., assignors to Physio-Control Corporation, Redmond, Wash.
Filed May 6, 1982, Ser. No. 375,556
Term of patent 14 years
U.S. Cl. D24—8

277,603
I.V. FLOW CONTROL APPARATUS
Herbert F. D'Alo, Lakewood, and Robert Case, Chicago, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed May 14, 1982, Ser. No. 378,298
Term of patent 14 years
U.S. Cl. D24—8



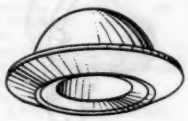
277,604
SALIVA EVACUATOR
Gerald W. Keresztes, 1822 Coachmans Trail, South Bend, Ind. 46637, and Katherine D. Wade, 144 Bertrand Rd., Niles, Mich. 49120
Filed Sep. 1, 1982, Ser. No. 413,964
Term of patent 14 years
U.S. Cl. D24—10

277,605
DENTAL BITE TRAY
Samuel R. Werrin, Pittsburgh, Pa., assignor to Morton Charlestein, Narberth and Jerrold Frezel, Wynnewood, both of, Pa.
Filed Apr. 19, 1982, Ser. No. 369,532
Term of patent 14 years
U.S. Cl. D24—16

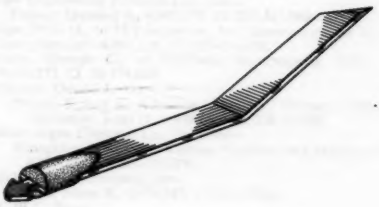


277,606
GLASS EYE FOR TAXIDERMY
Jerome J. Cebula, 14900 W. 31st Ave., Golden, Colo. 80401
Filed Jul. 26, 1982, Ser. No. 401,887
Term of patent 14 years
U.S. Cl. D24—33

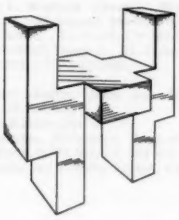
277,607
ARTIFICIAL ACETABULAR CUP OR SIMILAR ARTICLE
Shinkichi Himeno, Fukuoka, Japan, assignor to Yugen Kaisha Yushin Kaihatsu, Fukuoka, Japan
Filed Sep. 23, 1982, Ser. No. 421,806
Claims priority, application Japan, Apr. 6, 1982, 57-15066
Term of patent 14 years
U.S. Cl. D24—33



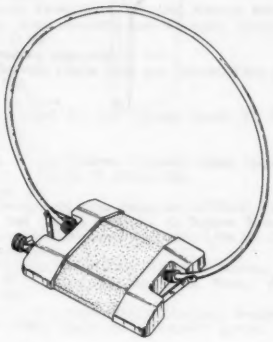
277,608
TROCAR
Fred V. G. Ekbladh, Pl 178, S-430 40 Särö, Sweden, and Hans Tillander, Humlegårdsgatan 3, S-412 74 Göteborg, Sweden
Filed Apr. 13, 1982, Ser. No. 367,889
Claims priority, application Sweden, Oct. 14, 1981, 81-2313
Term of patent 14 years
U.S. Cl. D24—51



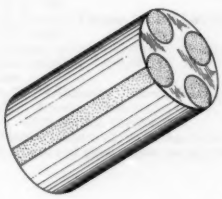
277,609
BUILDING BLOCK
Michael L. Deimen, 11695 Oak Hill, Pinckney, Mich. 48169
Filed Sep. 20, 1982, Ser. No. 419,770
Term of patent 14 years
U.S. Cl. D25—80



277,610
SPRAY HOOP
Richard C. Arginsky, Ellenville, N.Y., assignor to Master Juvenile Products, Ellenville, N.Y.
Filed Aug. 30, 1982, Ser. No. 412,958
Term of patent 14 years
U.S. Cl. D23—6



277,611
DETERGENT BAR
Jose A. Sanabria, Guatemala City, Guatemala, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 30, 1982, Ser. No. 425,208
Term of patent 14 years
U.S. Cl. D28—8.1



277,612
FLASHLIGHT
Robert Lievin, Vernon, France, assignor to Societe les Piles Wonder, Saint Oven, France
Filed May 13, 1981, Ser. No. 263,160
Claims priority, application France, Nov. 14, 1980, 803505
Term of patent 14 years
U.S. Cl. D26—46

277,613
HAIR DRYER
James M. Rittenhouse, Watchung, N.J., assignor to Conair Corporation, Edison, N.J.
Filed Jul. 7, 1983, Ser. No. 511,634
Term of patent 14 years
U.S. Cl. D28—13

LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 12TH DAY OF FEBRUARY, 1985

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Hentschel, Karl-Heinz; Dhein, Rolf; Winter, Hans; and Vojacek, Herbert, 4,499,000, Cl. 252-73.000.
Holmwood, Graham; and Regel, Erik, 4,499,281, Cl. 548-262.000.
Kerimis, Dimitrios; Muller, Hanns P.; and Wagner, Kuno, 4,499,253, Cl. 528-45.000.
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Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.
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Unterleitner, Fred C., 4,498,766, Cl. 356-73.000.
Wilner, Leslie B., 4,498,229, Cl. 29-580.000.

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Watts, Eric A., 4,499,099, Cl. 514-299.000.

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Cooke, Ronald D.; and Laage, Neil A., 4,498,249, Cl. 34-125.000.
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Cerny, Elmer J., 4,498,555, Cl. 181-129.000.
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Odom, Robert E., 4,498,893, Cl. 493-12.000.
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Benevento, Peter J., to Lambro Industries, Inc. Vent attachment for a hot air clothes dryer. 4,498,247, Cl. 34-82.000.
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Benkmann, Christian, to Linde Aktiengesellschaft; and Chemische Werke Huels Aktiengesellschaft. Safe adsorption process for the separation of hydrocarbons from oxygen containing gas. 4,498,910, Cl. 55-18.000.
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Bennion, Colin, to Fisons plc. Fused 1,3,5-triazines. 4,499,269, Cl. 544-198.000.
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Doggett, David E., 4,498,727, Cl. 350-237.000.
Benton, Stephen A., to Polaroid Corporation. Method and apparatus for making achromatic holograms. 4,498,729, Cl. 350-3.690.
Berg, Arthur H. Method for making plastic article with fibrous reinforcement. 4,499,039, Cl. 264-137.000.
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Berger, Abe, to M&T Chemicals Inc. Siloxane-containing polymers. 4,499,149, Cl. 428-447.000.
Berkeley, Bernard, to Hysan Corporation. Diphase drain cleaner with halogenated aliphatic solvent. 4,498,933, Cl. 134-22.140.
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Bernhardsson, Goran; and Jargell, Tomas. Method and a device for mixing and homogenization of a main substance with at least one additive substance, liquids in particular. 4,498,784, Cl. 366-134.000.
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Salts, Thomas R., 4,498,831, Cl. 414-46.000.
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Nelson, William; and Bearpark, John P., 4,498,522, Cl. 164-460.000.
White, Cyril J.; and Joyce, Christopher, 4,498,724, Cl. 339-97.00R.
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Bilstad, Arnold C.; Foley, John T.; and Woodworth, Walker P., to Baxter Travenol Laboratories, Inc. Pressure cuff draw mode enhancement system and method for a single needle blood fractionation system. 4,498,983, Cl. 210-97.000.
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Rosendall, Henry J., 4,498,207, Cl. 15-42.000.
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Biziere, Kathleen: *See*—
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Eilers, Norbert, 4,499,603, Cl. 455-205.000.
Blazey, Richard N., to Eastman Kodak Company. Apparatus and method providing improved control of a laser beam. 4,499,437, Cl. 332-7.510.
Blion, Didier, to Automobiles Citroen; and Automobiles Peugeot. Filler cap having a hinged cover. 4,498,600, Cl. 220-255.000.
Bloch, Richard: *See*—
Ash, Stephen R.; Wolf, Gordon C.; and Bloch, Richard, 4,498,902, Cl. 604-164.000.
Bloomer, James W., II; and Nunn, Robert H., to United States of America, Navy. Apparatus for measurement of sliding friction using gyroscopic mass. 4,498,329, Cl. 73-9.000.
Blundell, David J.; Griffin, Brian P.; and MacDonald, William A., to Imperial Chemical Industries PLC. Anisotropic polyesteramide polymers having improved retention of physical properties at elevated temperatures and methods of manufacture thereof. 4,499,256, Cl. 528-172.000.
Bluzer, Nathan, to Westinghouse Electric Corp. Semiconductor circuit for compressing the dynamic range of a signal. 4,499,590, Cl. 377-60.000.
BOC Group, Inc., The: *See*—
Corville, Richard E., 4,498,832, Cl. 414-217.000.
Bocker, Albert, to Albert Bocker GmbH & Co KG. Telescopic beam. 4,498,263, Cl. 52-223.00R.

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Trautman, Robert D., 4,498,823, Cl. 410-84.000.

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Boquet, Patrice: *See—*
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Borovian, Gayle E., to Lever Brothers Company. Synergistic preservative compositions. 4,499,071, Cl. 424-78.000.

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Botha, Charles F.; and Lambrechts, Adrianus L., to Ru-Korrel (Propietary) Limited. Compacting mill. 4,498,856, Cl. 425-331.000.

Botterman, D. L.; Wolff, N. A.; and Ver Planck, H. T., to Container Corporation of America. Carton for insects. 4,498,420, Cl. 119-15.000.

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Bouchaib, Pierre, to Instrument S.A. Installation for treatment of materials for the production of semi-conductors. 4,498,416, Cl. 118-719.000.

Bouchard, Andre C.; and Hall, Harold H., Jr., to GTE Products Corporation. Method of encapsulating a photoflash lamp using a powdered resin. 4,498,883, Cl. 445-28.000.

Bouchard, George A.: *See—*
Torino, Arthur J., Jr.; Bouchard, George A.; and Keane, Philip A., 4,499,466, Cl. 343-7.300.

Bourgeois, Ivan M., to Medtronic, Inc. Apparatus for reducing polarization potentials in a pacemaker. 4,498,478, Cl. 128-419.0PG.

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Neckers, Douglas C., 4,498,963, Cl. 204-159.190.

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Braat, Josephus J. M., to U.S. Philips Corporation. Record carrier with an optically readable information structure. 4,499,574, Cl. 369-275.000.

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Brake, Arthur L., to Vickers PLC of Vickers House. Releasable anchor connector for tension leg platform. 4,498,814, Cl. 405-224.000.

Brand, Leonard J.; and Nadelson, Jeffrey, to Sandoz, Inc. Isoxazolyl indolamines. 4,499,279, Cl. 548-247.000.

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Bratby, David M.: *See—*
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Brennan, Albert T., to SMA Controls Inc. Cutting tool. 4,498,820, Cl. 409-179.000.

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Brinker, Reiner G., to Philip Morris Incorporated. Laser beam interrupter and divider. 4,499,361, Cl. 219-121.0LK.

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Ballantine, James A.; Purnell, John H.; and Thomas, John M., 4,499,319, Cl. 585-467.000.
Brockelaby, Pete, III. Conical line-pulling carrier. 4,498,659, Cl. 254-134.400.
Bromboz, Jonathan J. Continuous method and apparatus for making a brush. 4,498,708, Cl. 300-2.000.
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Yanagi, Toshiaki; and Bessho, Yoshinori, 4,498,403, Cl. 112-121.120.
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Brown, Albert E.; and Emerson, Robert T., to Leedall Products Incorporated. Pressure-sensitive transfer elements and method. 4,499,140, Cl. 428-308.400.
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Johnson, Robert R., 4,498,488, Cl. 131-336.000.
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Zemlicka, Alvin R., 4,498,876, Cl. 440-89.000.
Buckle, Brain L., to E. C. Hopkins Limited. Inflatable articles. 4,498,881, Cl. 441-93.000.
Budd Company, The: *See*—
Kinkle, Robert W., 4,498,824, Cl. 410-121.000.
McCafferty, Gerald P.; Navoczynski, Stanley J.; and Kinkle, Robert W., 4,498,264, Cl. 52-281.000.
Budge, James D. Electively detachably coupled ball joint and pivot cup combination for a wind-propelled surfboard. 4,498,410, Cl. 114-91.000.
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Bulla, John G. Golf club head with flexure frequency matched with distortion-relaxation frequency of ball. 4,498,672, Cl. 273-169.000.
Buoncristiani, Vincenzo. Method for the automatic semicontinuous peritoneal dialysis. 4,498,900, Cl. 604-28.000.
Burdick, Laura M. Packaging for health care products. 4,498,590, Cl. 206-581.000.
Burgard, Michel; Piteau, Marc D.; Rollat, Alain J.; and Senet, Jean-Pierre G., to Societe Nationale des Poudres et Explosifs. Extraction of metals from aqueous solutions with cyclic organic carbonates. 4,499,057, Cl. 423-8.000.
Burks, Loyce O.: *See*—
Kinnamon, Herbert D., 4,498,857, Cl. 425-361.000.
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Allen, Danny H.; and Sumner, John H., 4,498,504, Cl. 139-302.000.
Burov, Atanas T.: *See*—
Konstantinov, Ivan T.; Mednikarov, Borislav D.; Sahatchieva, Maria A.; and Burov, Atanas T., 4,499,173, Cl. 430-278.000.
Burr, J. Kelsey, to Halkey-Roberts Corporation. Emergency rescue device. 4,498,879, Cl. 441-80.000.
Burroughs Corporation: *See*—
Del Tufo, Mark J.; Lake, Ralph J., Jr.; and Solomon, Stephen R., 4,498,802, Cl. 403-300.000.
Lance, Wayne E.; and Rayfield, Wilson P., 4,498,757, Cl. 355-3.0FU.
Burroughs Wellcome Co.: *See*—
Farrell, Geoffrey, 4,499,012, Cl. 252-522.00A.
Butler, Michael F.: *See*—
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Bzdula, Joseph A., to Carrier Corporation. Probe for measuring electrical conductance. 4,498,305, Cl. 62-84.000.
Cafarella, Thomas; and Enein, Mohamed, to Hazeltine Corporation. Microprocessor controlled AGC. 4,499,586, Cl. 375-98.000.
Calenoff, Emanuel; Jones, Ruth M.; Tsay, Yuh-Geng; and Beigler, Myron A., to Axonica, Inc. Chymopapain allergen and method. 4,499,065, Cl. 424-9.000.
Callander, Douglas D.: *See*—
Massey, Fred L.; and Callander, Douglas D., 4,499,226, Cl. 524-382.000.
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Campbell, Bruce D.; and Fentress, Vernon A., to Raychem Corporation. Fiber optic splice organizer. 4,498,732, Cl. 350-96.200.
Campolini, John; and Khaan, Dennis, to Coldstream (Engineering) Limited. Mixer having workhead operable in mixing and pumping modes. 4,499,562, Cl. 366-264.000.
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Berube, Gilles, 4,498,396, Cl. 102-529.000.
Canada, Robert O.: *See*—
Masaitis, William; and Canada, Robert O., 4,499,595, Cl. 382-9.000.
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Ramachandran, Kovilvila, 4,498,969, Cl. 204-298.000.
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Edakubo, Hiroo; and Maeda, Masaya, 4,499,504, Cl. 358-335.000.
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Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, 4,499,487, Cl. 358-41.000.
Tanaka, Nobuyoshi; and Kinoshita, Takao, 4,499,496, Cl. 358-213.000.
Canton Bio-Medical Products, Inc.: *See*—
Goodale, Robert H.; and DuJack, James M., 4,499,148, Cl. 428-447.000.
Cantu, Terry S.; and Williams, Mark C., to Conoco Inc. Alcohol/heavy liquid drying of coal. 4,498,246, Cl. 34-9.000.
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Carey, Thomas F. Pizza cooking utensil. 4,498,376, Cl. 99-345.000.
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Temme, Karl; Beckschafer, Klaus; and Pruller, Helmut, 4,498,986, Cl. 210-199.000.
Carlqvist, Stig: *See*—
Darche, Michel J. P.; and Carlqvist, Stig, 4,498,297, Cl. 60-525.000.
Carlson, John E., to Chem-Nuclear Systems, Inc. Compound catalyst system usable for the polymerization or curing of urea-formaldehyde polymeric condensation systems. 4,499,200, Cl. 502-172.000.
Carn, Annick R.: *See*—
Gresse, Herve R.; and Carn, Annick R., 4,498,735, Cl. 350-138.000.
Carpentier, Urgel R., to Plattsburgh Foundry, Inc. Dust valve and trap. 4,498,492, Cl. 137-315.000.
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Questel, John M.; and Madonia, Ralph J., 4,499,130, Cl. 428-42.000.
Carr, Stephen P. Clamping tuning machine. 4,498,366, Cl. 84-304.000.
Carrier Corporation: *See*—
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Carter, R. S. Trouser support system. 4,498,201, Cl. 2-312.000.
Carter, William A., to Hem-Sub, Inc. Interferon and interferon inducers combined with tobacco products. 4,498,485, Cl. 131-331.000.
Casey, Richard G.; and Friedman, Theodore D., to International Business Machines Corporation. Adaptive facsimile compression using a dynamic extendable decision network. 4,499,596, Cl. 382-37.000.
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Kobayashi, Saburo, 4,499,554, Cl. 364-900.000.
Caslin, Richard L.: *See*—
Vaughn, James N., 4,498,238, Cl. 33-1.00K.
Cassella Aktiengesellschaft: *See*—
Engelhardt, Friedrich; Piesch, Steffen; Balzar, Juliane; and Dawson, Jeffery C., 4,499,232, Cl. 524-548.000.
Castonguay, Roger N.; and Powell, David B., to General Electric Company. Interlock arrangement for circuit breaker compartments. 4,499,344, Cl. 200-50.00C.
Castrec, Yves-Marie; and Launay, Jean-Pierre, to Framatome & Cie. Machine for monitoring nuclear reactor equipment at its storage station. 4,499,046, Cl. 376-245.000.
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Yoshimura, Masaru; and Saitoh, Sumio, 4,499,217, Cl. 523-456.000.
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Broockman, Eric C.; Cato, Robert T.; and Lynch, Robert C., 4,499,608, Cl. 455-607.000.
Caulfield, H. John, to Aerodyne, Research, Inc. Hologram writer and method. 4,498,740, Cl. 350-3.(60.
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Celette, Germain, to Celette S.A. Device for position-checking of the shock-absorber heads of a front vehicle suspension system. 4,498,242, Cl. 33-180.0AT.
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Wartelle, Claude; and Favey, Charles, 4,498,799, Cl. 403-140.000.
Cerny, Elmer J., to Beltone Electronics Corporation. Hearing aid nubbin and acoustic damper. 4,498,555, Cl. 181-129.000.
Cerovsky, Karel: *See—*
Dvorsky, Drahomir; and Cerovsky, Karel, 4,499,282, Cl. 548-336.000.
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., to Ethicon, Inc. Non-metallic, bio-compatible hemostatic clips with interlocking latch means. 4,498,476, Cl. 128-346.000.
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Konrad, Michael W.; and Mark, David F., 4,499,188, Cl. 435-70.000.
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Chamberland, Roger R.; and Stanland, Andrew J., to United States of America, Navy. Thermo-electric valve. 4,498,491, Cl. 137-72.000.
Champion International Corporations *See—*
Dickert, James C.; Roccaforte, Harry I.; and Wysocki, Lawrence S., 4,498,620, Cl. 229-52.00A.
Dutcher, Daniel P., 4,498,581, Cl. 206-427.000.
Lepisto, J. George, 4,498,511, Cl. 141-85.000.
Roccaforte, Harry I., 4,498,619, Cl. 229-52.00B.
Scott, Raymond G., 4,498,588, Cl. 206-526.000.
Scott, Raymond G.; and McNulty, Sherry M., 4,498,589, Cl. 206-526.000.
Chand, Ramesh, to GC Industries. Electrochemical gas sensor. 4,498,970, Cl. 204-415.000.
Chaplin, John B.; and Ganczak, Edward G., to Textron Inc. Surface effect ship propeller mount. 4,498,873, Cl. 440-82.000.
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Kachajian, George S.; Steere, Robert E., Jr.; and Charles, Wesley, 4,498,449, Cl. 125-15.000.
Chee, Aik T.; and Kiat, Wee S., to Printed Circuits International, Inc. Electronic component cap and seal. 4,499,333, Cl. 174-52.0FP.
Chee-Shuen Lee, Francis; Mills, Ross N.; and Talke, Frank E., to International Business Machines Corporation. Gray scale printing with ink jet drop-on demand printing head. 4,499,479, Cl. 346-140.00R.
Chem-Nuclear Systems, Inc.: *See—*
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Benkmann, Christian, 4,498,910, Cl. 55-18.000.
Chemplex Company: *See —*
Pullukat, Thomas J.; Hoff, Raymond E.; and Lynch, Michael W., 4,499,198, Cl. 502-104.000.
Cheng, Chia C.; and Zee-Cheng, Robert K., to Warner-Lambert Company. 3,6-Dinitro-1,8-naphthalimides. 4,499,266, Cl. 544-126.000.
Chertilina, Tamara A.: *See—*
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., to James River-Norwalk, Inc. Apparatus and method for the manufacture of a non-woven fibrous web. 4,498,956, Cl. 162-101.000.
Chesley, Ray F.: *See—*
Minshew, Edward C., Jr.; and Chesley, Ray F., 4,498,510, Cl. 141-27.000.
Chevron Research Company: *See—*
Edwards, Laroy H., 4,499,098, Cl. 514-364.000.
Chiang, Robert L.: *See—*
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Mack, William; Morrison, Herbert; and Chiapetta, Frank, 4,498,237, Cl. 30-200.000.
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Chibnik, Sheldon, to Mobil Oil Corporation. Liquid fuel composition containing reaction product of tetrahydropyrimidines. 4,498,908, Cl. 44-71.000.
Chicago Bridge & Iron Company: *See—*
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Chisso Corporation: *See—*
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Chittineni, Chittibabu, to Conoco Inc. Edge and line detection in multi-dimensional noisey, imagery data. 4,499,598, Cl. 382-54.000.
Christensen, Alton O., to Condesin, Inc. Batch fabrication procedure for manufacture of arrays of field emitted electron beams with integral self-aligned optical lense in microguns. 4,498,952, Cl. 156-643.000.
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Jurgens, Rainer, 4,499,563, Cl. 367-84.000.
Christenson, Ronald E., to McNeilus Truck & Manufacturing Co., Inc. Swinging chute linkage assemblies. 4,498,568, Cl. 193-10.000.
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Christini, Roy A.: *See—*
Bowman, Kenneth A.; Christini, Roy A.; and Ballain, Marlyn D., 4,498,927, Cl. 75-67.00R.
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Shaldon, Stanley; Christopherson, Kjell H. I.; Falkvall, Thore E.; and Mattisson, Ulf K., 4,498,990, Cl. 210-637.000.
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Wright, Arthur; and Christopoulos, Christos, 4,499,417, Cl. 324-52.000.
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Fielding, Randy L., 4,498,635, Cl. 241-94.000.
Chumley, Claude. Cattle car. 4,498,418, Cl. 119-10.000.
Chun, Dai S. Hand-held defense weapon. 4,498,669, Cl. 273-84.00R.
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Piacenti, Franco; Ciampelli, Federigo; and Pasetti, Adolfo, 4,499,146, Cl. 428-422.000.
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Turner, George F. A. M., 4,498,763, Cl. 355-55.000.
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Husler, Rinaldo; Rutsch, Werner; and Dietliker, Kurt, 4,498,964, Cl. 204-159.230.
Lohse, Friedrich; and Zondler, Helmut, 4,499,268, Cl. 544-196.000.
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Fontana, Alberto; Fontanelli, Renzo; Sacrini, Egeo; and Cicchetti, Osvaldo, 4,499,273, Cl. 546-188.000.
Cichanowski, Stanley W., to General Electric Company. Capacitor with dielectric comprising poly-functional acrylate polymer and method of making. 4,499,520, Cl. 361-311.000.
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Gibbemeyer, Joseph F., 4,498,859, Cl. 425-534.000.
Cities Service Oil and Gas Corporation: *See—*
Marrocco, Matthew L., 4,498,540, Cl. 166-295.000.
CLAAS OHG: *See—*
Dammann, Johannes, 4,498,483, Cl. 130-27.00T.
Claes, Roger G., to GTE Products Corporation. Bifurcated electro-acoustic delay lines. 4,499,439, Cl. 333-142.000.
Clairol Incorporated: *See—*
Mack, William; Morrison, Herbert; and Chiapetta, Frank, 4,498,237, Cl. 30-200.000.
Walter, Henry J., 4,499,355, Cl. 219-10.49R.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., to Data General Corporation. Digital data processing system for executing instructions containing operation codes belonging to a plurality of operation code sets and names corresponding to name table entries. 4,499,604, Cl. 364-200.000.
Clancy, Gerald F.: *See—*
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
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Baltz, Gene F.; Clark, Amos M.; Hartke, David J.; and Jourdan, Donovan K., 4,498,434, Cl. 123-187.50R.
Clark Equipment Company: *See—*
Bauer, James J., 4,499,409, Cl. 318-383.000.
Clark, Robin D.: *See—*
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Clayton Foundation for Research: *See—*
Shive, William, 4,499,064, Cl. 424-2.000.
Cleminson, John H.: *See—*
Brema, Robert J.; Adamson, Gerald J.; Poissant, Philip L.; and Cleminson, John H., 4,498,660, Cl. 256-19.000.

Cline, Harvey E., to General Electric Company. Method for producing eutectics as thin films using a quartz lamp as a heat source in a line heater. 4,498,923, Cl. 75-65.0ZM.

Cline, Harvey E., to General Electric Company. Method for producing eutectics as thin films using a line heater. 4,498,924, Cl. 75-65.0ZM.

Cline, Harvey E., to General Electric Company. Method for producing eutectics as thin films using an arc lamp, as a heat source in a line heater. 4,498,925, Cl. 75-65.0ZM.

Cline, Harvey E., to General Electric Company. Method for producing eutectics as thin films using a laser device as a heat source. 4,498,926, Cl. 75-65.0ZM.

Coates, Clarence A., Jr.: *See—*
Hyatt, John A.; and Coates, Clarence A., Jr., 4,499,272, Cl. 546-172.000.

Coca-Cola Company, The: *See—*
King, Eddie W.; and Morgan, Annis R., Jr., 4,498,570, Cl. 194-1.00N.
Paisley, Gary V.; Altschuler, J. George; and Rommler, Josef, 4,499,141, Cl. 428-318.800.

Cochran, William H. Construction of rigid hull inflatable boat. 4,498,413, Cl. 114-345.000.

Coe, Anthony D.: *See—*
Williams, Frederick; and Coe, Anthony D., 4,498,839, Cl. 414-686.000.

Colamussi, Arturo. System for packaging ice-cream cones and like articles. 4,498,273, Cl. 53-54.000.

Coldstream (Engineering) Limited: *See—*
Campolini, John; and Khaan, Dennis, 4,499,562, Cl. 366-264.000.

Cole, Edward R.: *See—*
Minh, Thi H.; Cole, Edward R.; and Crank, George, 4,499,115, Cl. 426-546.000.

Colle, Edward A., Jr.: *See—*
Brieger, Emmet F.; George, Flint R.; and Colle, Edward A., Jr., 4,498,541, Cl. 166-297.000.

Collins, Paul W.; and Gasiecki, Alan F., to G. D. Searle & Co. Omega cycloalkyl prostaglandins. 4,499,296, Cl. 560-118.000.

Colombo, Piero, to Continua International Continuous Casting S.p.A. Apparatus for the continuous casting of metals. 4,498,520, Cl. 164-426.000.

Colson, Andrew E. Swimming pool apparatus. 4,498,984, Cl. 210-122.000.

Colton, John R.: *See—*
Baranyai, Lawrence; and Colton, John R., 4,499,577, Cl. 370-62.000.

Colucci, James, to Design Wire Products, Inc. Magazine display rack. 4,498,592, Cl. 211-42.000.

Columbia Machine, Inc.: *See—*
Anderson, Larry A., 4,498,573, Cl. 198-374.000.

Combustion Engineering, Inc.: *See—*
Nelson, H. Wharton, 4,498,955, Cl. 162-30.110.

Compagnie de Materiel de Micrographie "C.M.M.": *See—*
Gresse, Herve R.; and Carn, Annick R., 4,498,735, Cl. 350-138.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Dupuis, Bernard; and Behague, Francois, 4,499,575, Cl. 370-58.000.

Conbraco Industries, Inc.: *See—*
Mullis, Jerry D., 4,498,320, Cl. 70-177.000.

Condesin, Inc.: *See—*
Christensen, Alton O., 4,498,952, Cl. 156-643.000.

Connors, Paul E. Footwear protector. 4,498,252, Cl. 36-72.00B.

Conoco Inc.: *See—*
Cantu, Terry S.; and Williams, Mark C., 4,498,246, Cl. 34-9.000.
Chittineni, Chittibabu, 4,499,598, Cl. 382-54.000.
El-Saie, Ahmed A., 4,498,819, Cl. 406-181.000.
Mason, Charles E., 4,498,532, Cl. 166-70.000.

Consiglio Nazionale Delle Ricerche: *See—*
Piacenti, Franco; Ciampelli, Federigo; and Pasetti, Adolfo, 4,499,146, Cl. 428-422.000.

Container Corporation of America: *See—*
Botterman, D. L.; Wolff, N. A.; and Ver Planck, H. T., 4,498,420, Cl. 119-15.000.

Continental Disc Corporation: *See—*
Wilson, Bryce H.; and Hansen, Franklin A., 4,498,261, Cl. 52-1.000.

Continental Packaging Company, Inc.: *See—*
Ross, John M., 4,498,854, Cl. 425-116.000.

Continua International Continuous Casting S.p.A: *See—*
Colombo, Piero, 4,498,520, Cl. 164-426.000.

Contrawl Limited: *See—*
Newbury, Arthur D., 4,498,584, Cl. 206-510.000.

Convay Systems Limited: *See—*
Potts, Roger F., 4,498,934, Cl. 134-254.000.

Convey, Frank H., Jr., to Harris Graphics Corporation. Signature transfer vehicle with stack clamping mechanism. 4,498,381, Cl. 100-100.000.

Cook, Edward H., Jr.: *See—*
Lazarz, Christine A.; and Cook, Edward H., Jr., 4,498,961, Cl. 204-98.000.

Cook, Evin L., to Mobil Oil Corporation. Producing well stimulation method - combination of thermal and solvent. 4,498,537, Cl. 166-257.000.

Cook, Joel M.; Donnelly, Vincent M.; Flamm, Daniel L.; Ibbotson, Dale E.; and Mucha, John A., to AT&T Bell Laboratories. Etching techniques. 4,498,953, Cl. 156-646.000.

Cook, John S., to Mattel, Inc. Shifting mechanism for toy vehicle. 4,498,887, Cl. 446-462.000.

Cooke, Horise M., to Stratoflex, Inc. Hose fitting and method of assembly. 4,498,691, Cl. 285-12.000.

Cooke, Ronald D.; and Laage, Neil A., to Beloit Corporation. Dryer stationary syphon adjustment mechanism. 4,498,249, Cl. 34-125.000.

Cooper Industries, Inc.: *See—*
Tauber, Richard J.; and Rosborg, Daniel J., 4,499,527, Cl. 362-267.000.

Cooper, Leo, to Tubular Specialties Mfg., Inc. Support for bathroom fixture or the like. 4,498,654, Cl. 248-251.000.

Cornelius, Rajendra S.; Martin, Albert R.; Lunk, Hans E.; and Mendenhall, Mark D., to Raychem Corporation. High frequency attenuation core and cable. 4,499,438, Cl. 333-1.000.

Corning Glass Works: *See—*
Mann, George H., 4,498,919, Cl. 65-30.110.

Corville, Richard E., to BOC Group, Inc., The. Workpiece accumulating and transporting apparatus. 4,498,832, Cl. 414-217.000.

Corwin, Richard R.; and Moorman, Stephen L., to Beta Industries, Inc. Apparatus and method for determining the configuration of a reflective surface. 4,498,770, Cl. 356-349.000.

Cosden Technology, Inc.: *See—*
Hahn, Granville J.; Rutledge, Raleigh N.; and Murley, Jackie D., 4,499,041, Cl. 264-173.000.

Cosgrove, William J.: *See—*
White, Charles M.; and Cosgrove, William J., 4,499,488, Cl. 358-51.000.

Costello, Samuel J.: *See—*
Brandt, David S.; and Costello, Samuel J., 4,498,326, Cl. 72-318.000.

Cousens, Donald E.: *See—*
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,498,638, Cl. 242-45.000.

Covini, Romano: *See—*
Moreschini, Luciano; Dalloro, Leonardo; Cavaterra, Enrico; Petrini, Guido; and Covini, Romano, 4,499,302, Cl. 562-599.000.

Crank, George: *See—*
Minh, Thi H.; Cole, Edward R.; and Crank, George, 4,499,115, Cl. 426-546.000.

Creutz, Helmut: *See—*
Schierz, Winfried; and Creutz, Helmut, 4,499,485, Cl. 357-74.000.

Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, to Societe Cortial, S.A. N-(5-aminomethyl-2-oxazolin-2-yl)-N'-phenylureas, compositions and use. 4,499,090, Cl. 514-210.000.

Crews, Gary A.: *See—*
Fix, James E.; and Crews, Gary A., 4,499,565, Cl. 367-49.000.

Crippen Manufacturing Co., Inc.: *See—*
Frevert, Robert E., 4,498,981, Cl. 209-243.000.

Crowley, Burlon C.: *See—*
Tetenbaum, Marvin T.; and Crowley, Burlon C., 4,499,233, Cl. 524-591.000.

Crowley, Norman: *See—*
Fuchs, Gilbet; Crowley, Norman; and Wink, Randall, 4,498,397, Cl. 104-35.000.

Csiki, Kalman, to Gullfiber AB. Ear plug as well as a method and apparatus for the production thereof. 4,498,469, Cl. 128-152.000.

Cull, Neville L.: *See—*
Pine, Lloyd A.; and Cull, Neville L., 4,498,975, Cl. 208-114.000.

Cummings, Jimmie L.: *See—*
Mason, Walter R.; and Cummings, Jimmie L., 4,499,561, Cl. 366-156.000.

Curley, Mark D. Hurlable water rescue aid. 4,498,880, Cl. 441-81.000.

Currier, Gregory B.: *See—*
Howell, Paul J.; and Currier, Gregory B., 4,498,227, Cl. 29-576.00B.

Curtis, John R.; and Renwick, John D., to Sericol Group Limited. Photopolymerizable materials for use in producing screen printing stencils. 4,499,175, Cl. 430-253.000.

Curtis, John R.; and Renwick, John D., to Sericol Group Limited. Photopolymerizable composition for producing screen printing stencils. 4,499,176, Cl. 430-253.000.

Cutter Laboratories, Inc.: *See—*
Tenold, Robert A., 4,499,073, Cl. 424-85.000.

Cuvilly, Jean-Pierre, to Essilor International. Device for examining an object under conditions of lighting on a black background. 4,498,769, Cl. 356-244.000.

Dai-Ichi Seiko Co., Ltd.: *See—*
Nishiuchi, Toshio, 4,499,370, Cl. 235-144.0HC.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Suzuki, Norimoto; and Inoue, Shunji, 4,499,126, Cl. 428-13.000.

Daikin Kogyo Co., Ltd.: *See—*
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.

Dailey Petroleum Services Corp.: *See—*
Teng, Chuan C., 4,498,548, Cl. 175-299.000.

Daimaru, Akimasa: *See—*
Ban, Keisuke; and Daimaru, Akimasa, 4,498,219, Cl. 29-156.50R.

Daimler-Benz Aktiengesellschaft: *See—*
Petrovsky, Jan; and Roloff, Heinz, 4,498,848, Cl. 417-253.000.
Schobbe, Hermann, 4,498,680, Cl. 277-112.000.

Dainippon Ink and Chemicals, Inc.: *See—*
Murakami, Yoichi; Shoji, Akio; Takezawa, Shoichiro; Ishikawa, Noboru; and Morita, Toshiaki, 4,499,239, Cl. 525-111.000.

Dakin, Wayne R.; and Isailovic, Jordan, to Discovision Associates. Compressed bandwidth frequency modulation signal format apparatus and method. 4,499,502, Cl. 358-310.000.

Dalloro, Leonardo: *See*—
Moreschini, Luciano; Dalloro, Leonardo; Cavaterra, Enrico; Petrini, Guido; and Covini, Romano, 4,499,302, Cl. 562-599.000.
Dalton, Thomas B., to Dyna-Torque, Inc. Torque measuring device. 4,498,336, Cl. 73-168.000.
Dammann, Johannes, to CLAAS OHG. Axial threshing and separating arrangement. 4,498,483, Cl. 130-27.00T.
Danavox A/S: *See*—
Elback, Jorgen F., 4,499,337, Cl. 179-27.00D.
Daniels, Edward P.; and Dlugos, Daniel F., to Pitney Bowes Inc. Method and apparatus for individualized selection of special fee postage value computations. 4,499,545, Cl. 364-464.000.
Dapkus, John G. Explosive target. 4,498,677, Cl. 273-380.000.
Darche, Michel J. P.; and Carlqvist, Stig, to Societe ECA. Heat exchanger module for Stirling engines. 4,498,297, Cl. 60-525.000.
Data General Corporation: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.
Datawell B.V.: *See*—
Rademakers, Petrus J., 4,498,877, Cl. 441-23.000.
David Brown Tractors Ltd.: *See*—
Williams, Frederick; and Coe, Anthony D., 4,498,839, Cl. 414-686.000.
David, Wallace M.: *See*—
Bowling, James A.; and David, Wallace M., 4,498,390, Cl. 101-365.000.
Davies, David H.; and Evanicky, Daniel E., to Minnesota Mining and Manufacturing Company. Cover assembly for optical recording medium. 4,499,477, Cl. 346-137.000.
Davies, William, to J. C. Renfroe and Sons, Inc. Lifting clamp locking mechanism with push button release handle. 4,498,699, Cl. 294-101.000.
Davis, John D. Flue cleaner. 4,498,212, Cl. 15-242.000.
Davis, Jon F.: *See*—
Spicer, Leonard D.; Bennett, Dennis W.; and Davis, Jon F., 4,499,190, Cl. 436-122.000.
Davis, Richard B.: *See*—
Southgate, Peter D.; Fairbanks, David W.; Davis, Richard B.; and Beltz, John P., 4,498,779, Cl. 356-384.000.
Davison, John B.; Jasinski, Raymond J.; and Peerce-Landers, Pamela J., to Occidental Chemical Corporation. Electrochemical maintenance of catalyst activity. 4,499,025, Cl. 260-465.00R.
Davy McKee AG: *See*—
Heinze, Helmut; Wilhelm, Fritz; Mackensen, Klaus; and Finkeldei, Ferdinand, 4,499,261, Cl. 528-279.000.
Dawson, Jeffery C.: *See*—
Engelhardt, Friedrich; Piesch, Steffen; Balzar, Juliane; and Dawson, Jeffery C., 4,499,232, Cl. 524-548.000.
Dawson, Samuel O.: *See*—
Tank, Gene F.; Dawson, Samuel O.; and Barnett, Phillip R., 4,498,913, Cl. 55-356.000.
Day, Donald C., to AMSTED Industries Incorporated. Locating pin. 4,498,798, Cl. 403-24.000.
Deal, Carl H.; and Flynn, A. John, to Shell Oil Company. Simultaneous removal of water and hydrogen sulfide from gaseous carbon dioxide. 4,498,911, Cl. 55-32.000.
Deborde, Albert H.; and Remond, Pierre, to Saurer-Diederichs Societe Anonyme. Weft predelivery and measuring device for a shuttleless loom. 4,498,639, Cl. 242-47.010.
de Bruyne, Norman A., to Techne Corporation. Floating magnetic stirrer for culture medium. 4,498,785, Cl. 366-274.000.
Deere & Company: *See*—
Gassman, Max P., 4,498,846, Cl. 417-214.000.
Degnan, Thomas F.; and Partridge, Randall D., to Mobil Oil Corporation. Suppression of light gas production in cracking processes by the addition of highly siliceous materials having high surface area and low acidity. 4,498,976, Cl. 208-120.000.
Deguchi, Hidetaka: *See*—
Watanabe, Kazumasa; Deguchi, Hidetaka; and Suginaka, Shunji, 4,499,181, Cl. 430-558.000.
Dehne, Ernst-August: *See*—
Breitbach, Elmar; and Dehne, Ernst-August, 4,498,341, Cl. 73-517.00R.
DeJeney, Viktor. Device to correct the malfunction in film feed of a perforated film through a light beam. 4,498,745, Cl. 352-119.000.
Dejeux, Pol: *See*—
Leroy, Jean-Luc; and Dejeux, Pol, 4,498,426, Cl. 122-32.000.
Delaney, Michael J.: *See*—
Stokes, Robert B.; Yen, Kuo-Hsiung; Lau, Kei-Fung; Kagiwada, Reynold S.; and Delaney, Michael J., 4,499,393, Cl. 310-313.00A.
Del Tufo, Mark J.; Lake, Ralph J., Jr.; and Solomon, Stephen R., to Burroughs Corporation. Coupling arrangement. 4,498,802, Cl. 403-300.000.
DeLuca, Frank T.; and Dobson, Gordon A., to Lockheed Corporation. Cargo door assembly. 4,498,648, Cl. 244-118.300.
Demizu, Michinosuke: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.
Demmer, Walter; Gutsmann, Rolf D.; and Lenth, Jurgen, to U.S. Philips Corporation. Digital FM demodulator using a filter having a linearly sloping frequency-amplitude characteristic. 4,499,427, Cl. 329-107.000.
Demovic, Vojtech: *See*—
Schmidhuber, Karl; Wall, Helmut; and Demovic, Vojtech, 4,498,703, Cl. 297-328.000.
Dentsply Research & Development Corp.: *See*—
Meislitzer, Karl H.; and Hauner, Wigbert, 4,498,866, Cl. 432-239.000.
Schulmeyer, Herbert G., 4,498,865, Cl. 432-18.000.
Denzel, Theodor: *See*—
Breuer, Hermann; Denzel, Theodor; and Treuner, Uwe D., 4,499,016, Cl. 260-239.00A.
de Palezieux, Jacques; and Jobin, Georges F., to Runtal Holding Company S.A. Heat exchanger. 4,498,529, Cl. 165-176.000.
Derichs, Eberhard: *See*—
Gerarts, Wilhelm; Thielen, Gerd; and Derichs, Eberhard, 4,498,527, Cl. 165-89.000.
Derivaz, Charles, to Samvaz S.A. Plane. 4,498,513, Cl. 145-11.000.
Design Wire Products, Inc.: *See*—
Colucci, James, 4,498,592, Cl. 211-42.000.
Designs for Vision, Inc.: *See*—
Feinbloom, William, 4,498,743, Cl. 351-45.000.
de Solms, S. Jane, to Merck & Co., Inc. Benzothiazole-2-sulfonamide derivatives for the topical treatment of elevated intraocular pressure. 4,499,103, Cl. 514-365.000.
Desprez, Pierre: *See*—
Finger, Ulrich; Desprez, Pierre; and Ligneres, Pierre, 4,499,538, Cl. 364-200.000.
Deutsche Forschungs- u. Versuchsanstalt fur Luft-u-Raumfahrt e.V.: *See*—
Breitbach, Elmar; and Dehne, Ernst-August, 4,498,341, Cl. 73-517.00R.
Devoe, Richard A.: *See*—
Whitely, Elliot F.; Devoe, Richard A.; and Gadbois, Gerald W., 4,499,134, Cl. 428-102.000.
Deyer, Craig E., to RCA Corporation. System for converting the frequency of a pulse train to a binary number. 4,499,588, Cl. 377-42.000.
Dhein, Rolf: *See*—
Hentschel, Karl-Heinz; Dhein, Rolf; Winter, Hans; and Vojacek, Herbert, 4,499,000, Cl. 252-73.000.
Diachem Industries, Inc.: *See*—
Sortwell, Edwin T., 4,499,214, Cl. 523-336.000.
Diamond, Jeffrey S. Combined mailbox and supporting post. 4,498,621, Cl. 232-35.000.
Diba, Keyvan T., to Solir Corporation. Solar panel handling and mounting device. 4,498,822, Cl. 410-2.000.
Dickert, James C.; Roccaforte, Harry I.; and Wysocki, Lawrence S., to Champion International Corporation. Carton with carrying handle. 4,498,620, Cl. 229-52.00A.
Dickinson, Robert V.; Galie, Louis M.; and Snow, Craig A. Locating digital coded words which are both acceptable misspellings and acceptable inflections of digital coded query words. 4,499,553, Cl. 364-900.000.
Diehl GmbH & Co.: *See*—
Grimmer, Horst; and Lunz, Alfred-Gunther, 4,498,788, Cl. 368-106.000.
Diesel Kiki Company, Ltd.: *See*—
Ohkoshi, Masayoshi; and Suzuno, Yoshiro, 4,498,437, Cl. 123-373.000.
Dietliker, Kurt: *See*—
Husler, Rinaldo; Rutsch, Werner; and Dietliker, Kurt, 4,498,964, Cl. 204-159.230.
Dietrich, Bernhard, to SDS-Elektro G.m.b.H. Magnetic snap switch. 4,499,345, Cl. 200-67.00F.
Dietz, Peter W.; and Wood, Ralph T., to General Electric Company. Method for coating with an atomizable material. 4,499,118, Cl. 427-28.000.
Diggins, Joseph P., to Foster Wheeler Energy Corporation. Method for inspecting interior of a pressure vessel having replaceable plug assembly. 4,498,339, Cl. 73-432.00R.
Dijkstra, Kees; and Garenfeld, Andreas J., to U.S. Philips Corporation. Thermodynamic oscillator with average pressure control. 4,498,296, Cl. 60-521.000.
Dinger, Rudolf, to Asulab S.A. Sensitive element for use in a strain sensor and a sensor comprising such an element. 4,498,344, Cl. 73-778.000.
DiNicolantonio, Arthur R.; and Wei, Victor K., to Exxon Research & Engineering Co. Furnace having bent/single-pass tubes. 4,499,055, Cl. 422-197.000.
Di Nunzio, Vittorio: *See*—
Iacoponi, Stefano; and Di Nunzio, Vittorio, 4,499,410, Cl. 318-444.000.
DiRienzo, Armand. Emergency fuel flow shut-off device. 4,498,606, Cl. 222-52.000.
Dischert, Robert A.; and Topper, Robert J., to RCA Corporation. Television gamma corrector with symmetrical response about black-level. 4,499,494, Cl. 358-164.000.
Discovision Associates: *See*—
Dakin, Wayne R.; and Isailovic, Jordan, 4,499,502, Cl. 358-310.000.
Lopez De Romana, Eduardo A., 4,499,569, Cl. 369-45.000.
Dittmer, Mark W.: *See*—
Dittmer, Willard W.; and Dittmer, Mark W., 4,498,373, Cl. 98-33.100.

Dittmer, Willard W.; and Dittmer, Mark W. Air inlet system. 4,498,373, Cl. 98-33.100.

Dixon, Glen J. Ara-A Antiviral composition and method of administering the same. 4,499,084, Cl. 514-46.000.

Djelouah, Salah, to Sorelec. Thermomechanical-conversion engine, especially an engine working with a low-boiling-point fluid. 4,498,302, Cl. 60-671.000.

Dlugos, Daniel F.: *See*—
Daniels, Edward P.; and Dlugos, Daniel F., 4,499,545, Cl. 364-464.000.

DM International, Inc.: *See*—
Milner, Geoffrey; Butler, Michael F.; and Ashworth, Robert A., 4,498,909, Cl. 48-209.000.

Doane, William J., to United States of America, Navy. Frangible fly through diaphragm for missile launch canister. 4,498,368, Cl. 89-1.817.

Dobson, Gordon A.: *See*—
DeLuca, Frank T.; and Dobson, Gordon A., 4,498,648, Cl. 244-118.300.

Dr. C. Otto & Comp. G.m.b.H.: *See*—
Ritter, Horst; and Herpers, Edmund-Theo, 4,499,060, Cl. 423-232.000.

Dr. Carl Hahn G.m.b.H.: *See*—
Friese, Axel, 4,498,218, Cl. 28-119.000.

Dr. Ing. Rudolf Hell GmbH: *See*—
Gall, Winrich; and Wellendorf, Klaus, 4,499,489, Cl. 358-75.000.

Dr. L°. Zambeletti, S.p.A.: *See*—
Bergamaschi, Mario; and Alfieri, Carlo, 4,499,107, Cl. 514-575.000.

Doggett, David E., to Benson Inc. Adjusting mechanism for use with diode lasers. 4,498,737, Cl. 350-237.000.

Dohi, Takashi: *See*—
Shinozaki, Nozomu; Dohi, Takashi; Yamazaki, Shinji; and Neki, Shigeo, 4,499,449, Cl. 338-32.00R.

Dominguez, Richard J. G.; McEntire, Edward E.; and Naylor, Carter G., to Texaco Inc. Reaction injection molded elastomers containing high molecular weight organic acids. 4,499,254, Cl. 528-49.000.

Donahue, Barbara S.; and Ficca, Irene. Support device for nursing bottles and amusement items. 4,498,613, Cl. 224-251.000.

Donaldson, A. Burl: *See*—
Eisenhawer, Stephen; Mulac, Anthony J.; Donaldson, A. Burl; and Fox, Ronald L., 4,498,542, Cl. 166-303.000.

Donaldson Company, Inc.: *See*—
Ericksen, Donald J., 4,498,914, Cl. 55-480.000.

Dong Hwa Engineering Co. Ltd.: *See*—
Bae, Ik J., 4,498,598, Cl. 220-6.000.

Donnelly, Vincent M.: *See*—
Cook, Joel M.; Donnelly, Vincent M.; Flamm, Daniel L.; Ibbotson, Dale E.; and Mucha, John A., 4,498,953, Cl. 156-646.000.

Dore, Jacky; and Moser, Helmut, to Sandoz Ltd. Polyphthalocyanine compounds useful as dyestuffs. 4,499,018, Cl. 260-245.810.

Dornier GmbH: *See*—
Proksch, Hans-Jorg; Welte, Dieter; Zimmer, Herbert; and Lotz, Michael, deceased, 4,498,646, Cl. 244-35.00R.
Reccius, Helmut; and Ponitzsch, Werner, 4,498,325, Cl. 72-302.000.

Dornier System GmbH: *See*—
Kock, Wulf; Schmidberger, Rainer; and Wagner, Wolfgang, 4,498,395, Cl. 102-517.000.
Rottenbacher, Reinhard, 4,499,360, Cl. 219-85.00H.

Doron, Benjamin: *See*—
Assaf, Gad; and Doron, Benjamin, 4,498,300, Cl. 60-641.800.

Doty, Gerald A., to Gateway Industries, Inc. Seat belt retractors. 4,498,642, Cl. 242-107.40A.

Doty, John S, to Hughes Aircraft Company. Tool for optically finishing multiple mounted optical fibers. 4,498,260, Cl. 51-217.00R.

Douville, Jean-Pierre: *See*—
Rouly, Eric; and Douville, Jean-Pierre, 4,498,386, Cl. 101-40.000.

Dovertie, Ralph G.: *See*—
Otteblad, Sven I.; and Dovertie, Ralph G., 4,498,408, Cl. 114-52.000.

Dow Chemical Company, The: *See*—
Garces, Juan M., 4,499,320, Cl. 585-467.000.
Malhotra, Sudarshan K.; and Orvik, Jon A., 4,499,277, Cl. 546-346.000.
Malhotra, Sudarshan K.; and Orvik, Jon A., 4,499,276, Cl. 546-346.000.
Wang, Chun S.; Pham, Ha Q.; and Bertram, James L., 4,499,255, Cl. 528-95.000.

Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., to PPG Industries, Inc. Color plus clear coating method utilizing addition interpolymers containing alkoxy silane and/or acyloxy silane groups. 4,499,150, Cl. 428-447.000.

Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., to PPG Industries, Inc. Color plus clear coating method utilizing addition interpolymers containing alkoxy silane and/or acyloxy silane groups. 4,499,151, Cl. 428-447.000.

Dragerwerk AG: *See*—
Warncke, Ernst, 4,498,470, Cl. 128-202.260.

Dragerwerk Aktiengesellschaft: *See*—
Matthiessen, Hans, 4,499,423, Cl. 324-425.000.

Dresser Industries, Inc.: *See*—
Engelhardt, Friedrich; Piesch, Steffen; Balzar, Juliane; and Dawson, Jeffery C., 4,499,232, Cl. 524-548.000.

Drug Concentrates, Inc.: *See*—
Smith, George B., II, 4,498,591, Cl. 206-620.000.

Drumm, Arthur E. Brush bristle unit for brush rolls. 4,498,210, Cl. 15-183.000.

DSM Resins B.V.: *See*—
Verwer, Andreas N. J.; and Evers, Johannes T. M., 4,499,235, Cl. 525-38.000.

Dso "Pharmachim": *See*—
Galabov, Angel S.; and Mastikova, Margarita H., 4,499,093, Cl. 514-258.000.

Dubey, Agnes: *See*—
Wyrick, Steven D.; Hall, Iris H.; and Dubey, Agnes, 4,499,303, Cl. 514-605.000.

Dubroeucq, Marie-Christine; Renault, Christian; and Le Fur, Gerard, to Pharmuka Laboratoires. Derivatives of arene and hetero-arene carboxamides and their use as medicaments. 4,499,094, Cl. 514-301.000.

Ducati, Adriano C.: *See*—
Merritt, Francis L.; and Ducati, Adriano C., 4,499,334, Cl. 174-111.000.

Duck, Roger: *See*—
James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., 4,499,154, Cl. 428-494.000.

Duckett, Robert C.: *See*—
Pardo, Warren A., 4,498,695, Cl. 292-260.000.

Duffield, Thomas P.; and Winnale, James A., to General Motors Corporation. Storage reel for door mounted restraint belt. 4,498,689, Cl. 280-803.000.

Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, to Institut Pasteur. Synthetic ST toxin, process for its preparation and its use as a vaccinating agent. 4,499,080, Cl. 514-12.000.

Duflot, Edith: *See*—
Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, 4,499,080, Cl. 514-12.000.

Dufour, Mark D.: *See*—
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,498,638, Cl. 242-45.000.

Dugan, Michael T.: *See*—
Miazga, Dennis E.; Nguyen, Tuan A.; and Dugan, Michael T., 4,499,581, Cl. 371-20.000.

DuJack, James M.: *See*—
Goodale, Robert H.; and DuJack, James M., 4,499,148, Cl. 428-447.000.

Duncan, Damon H., to Sperry Corporation. Damping mechanism for gyroscopes. 4,498,340, Cl. 73-504.000.

Duncan, William C. W., to Plessey Overseas Limited. Electrical connectors. 4,498,718, Cl. 339-59.00M.

Dunning, John S.: *See*—
Oden, Laurance L.; and Dunning, John S., 4,498,928, Cl. 75-124.000.

Dupin, Thierry: *See*—
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,499,203, Cl. 502-247.000.

Du Pont de Nemours, E. I., and Company: *See*—
Booker, Reginald A., 4,499,182, Cl. 430-621.000.
Ernst, Richard E., 4,499,291, Cl. 549-429.000.
Hermolin, Joshua, 4,499,305, Cl. 568-342.000.
Honsberg, Wolfgang, 4,499,244, Cl. 525-384.000.
Irwin, Robert S., 4,499,259, Cl. 528-190.000.
Kaplit, Michael, 4,498,781, Cl. 356-435.000.
Shenvi, Ashokkumar B.; and Kettner, Charles A., 4,499,082, Cl. 514-2.000.

Dupuis, Bernard; and Behague, Francois, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Group of terminal units for a digital exchange. 4,499,575, Cl. 370-58.000.

Duracell Inc.: *See*—
Mallory, Henry R., 4,499,525, Cl. 362-157.000.

Durango Systems, Inc.: *See*—
Waibel, Helmut K., 4,498,794, Cl. 400-629.000.

Durant, Graham J.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pharmacologically active isoxazole and triazole compounds. 4,499,101, Cl. 514-374.000.

Dutcher, Daniel P., to Champion International Corporation. Beverage can carton with opening panel. 4,498,581, Cl. 206-427.000.

Dvorsky, Drahomir; and Cerovsky, Karel, to Vyzkumny ustav zuslechtovaci. Quaternary ammonium compounds. 4,499,282, Cl. 548-336.000.

Dye, Lester L., to Eastern Company, The. Rock formation support plate. 4,498,815, Cl. 405-259.000.

Dyer, Lawrence D.; and McGregor, Anderson D., to Texas Instruments Incorporated. Method for measuring saw blade flexure. 4,498,345, Cl. 73-849.000.

Dyna-Torque, Inc.: *See*—
Dalton, Thomas B., 4,498,336, Cl. 73-168.000.

Dynalube Holdings Limited: *See*—
Bendahan, Samuel H., 4,498,558, Cl. 184-15.100.

Dynamit Nobel Aktiengesellschaft: *See*—
Fischer, Klaus; Kroschel, Heinz; Nicodemus, Joachim; and Petters, Willi, 4,498,393, Cl. 102-393.000.

E. C. Hopkins Limited: *See*—
Buckle, Brain L., 4,498,881, Cl. 441-93.000.

E.F.C.I.S.: *See*—
Brice, Jean-Michel, 4,499,560, Cl. 365-228.000.

E. R. Squibb & Sons, Inc.: *See*—
Breuer, Hermann; Denzel, Theodor; and Treuner, Uwe D., 4,499,016, Cl. 260-239.00A.

Gordon, Eric M.; and Weller, Harold N., III, 4,499,079, Cl. 514-2.000.
Krapcho, John, 4,499,287, Cl. 548-532.000.
Sprague, Peter W.; and Heikes, James E., 4,499,292, Cl. 549-459.000.
Varma, Ravi K., 4,499,021, Cl. 260-397.100.

E-Systems, Inc.: *See—*
Mosley, William H.; Sanders, David E.; and Roberson, Richard E., 4,499,585, Cl. 375-62.000.

E.V. Camp Steel Works, Inc.: *See—*
Gearhart, Gordon E., 4,498,284, Cl. 59-84.000.

Ealovega, George D.; and Langridge, Peter J. Method of and apparatus for producing a photograph of a mobile subject. 4,498,744, Cl. 352-89.000.

Eastern Company, The: *See—*
Dye, Lester L., 4,498,815, Cl. 405-259.000.

Eastman Kodak Company: *See—*
Bishop, John F.; and Braun, Thomas O., 4,499,174, Cl. 430-215.000.
Blazey, Richard N., 4,499,437, Cl. 332-7.510.
Fagerburg, David R.; and McFarlane, Finley E., 4,499,262, Cl. 528-279.000.
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,499,304, Cl. 564-92.000.
Goodhue, Charles T., 4,499,184, Cl. 435-11.000.
Hyatt, John A.; and Coates, Clarence A., Jr., 4,499,272, Cl. 546-172.000.
Molaire, Michel F., 4,499,165, Cl. 430-17.000.

Eaton Corporation: *See—*
Holtzhauser, Joseph C.; and Kwasniewski, Dale L., 4,498,515, Cl. 152-417.000.
Ross, Alan R., 4,498,350, Cl. 74-89.150.

Eaton, Thomas E.: *See—*
Peper, Henry; Eaton, Thomas E.; and Ferguson, Edward J., 4,498,797, Cl. 401-141.000.

Ebata, Yoshikazu: *See—*
Hanyu, Susumu; and Ebata, Yoshikazu, 4,498,405, Cl. 112-168.000.

Eberly, Paul E., Jr., to Exxon Research & Engineering Co. Hydrodesulfurization process with conversion of heavy hydrocarbons utilizing a catalyst containing a group IIA metal component. 4,498,979, Cl. 208-216.00R.

Ebert, Michael: *See—*
Miller, William, 4,498,500, Cl. 137-883.000.

Ebi, Hiroyuki: *See—*
Miyatake, Kimio; Ishida, Kozo; Ebi, Hiroyuki; and Shimada, Takeshi, 4,499,378, Cl. 250-343.000.

Eckert, Alfred; Heilmeir, Ernst; and Hempen, Klaus, to Siemens Aktiengesellschaft. Apparatus for rapid execution of interrupts after the recognition of an interrupt request. 4,499,537, Cl. 364-200.000.

Economopoulos, Peter C.: *See—*
Still, David W.; and Economopoulos, Peter C., 4,499,579, Cl. 371-15.000.

Economy Color Card Co., Inc.: *See—*
Ackerman, Don, 4,498,828, Cl. 412-4.000.

Economy, James; and Zachariades, Anagnostis E., to International Business Machines Corporation. Process for finishing surfaces achieving improved magnetic disk performance. 4,499,122, Cl. 427-130.000.

Edakubo, Hiroo; and Maeda, Masaya, to Canon Kabushiki Kaisha. Video system. 4,499,504, Cl. 358-335.000.

Edel, Maurice. Multi-hull sailboat. 4,498,409, Cl. 114-61.000.

Edwards, Laroy H., to Chevron Research Company. Insecticidal N-carbamoyl-oxadiazolidin-5-ones and thiones. 4,499,098, Cl. 514-364.000.

Eggertsson, Thorsteinn: *See—*
Bjarnason, Gudmundur; and Eggertsson, Thorsteinn, 4,498,818, Cl. 406-137.000.

EIC Laboratories, Inc.: *See—*
Foos, Joseph S., 4,499,161, Cl. 429-196.000.

Eicken, Karl; Rohr, Wolfgang; and Wuerzer, Bruno, to BASF Aktiengesellschaft. N-aminomethylhaloacetanilides and their use for controlling undesirable plant growth. 4,498,922, Cl. 71-111.000.

Eilers, Norbert, to Blaupunkt Werke GmbH. Radio receiver with reception-readiness monitoring feature and method. 4,499,603, Cl. 455-205.000.

Eisenhawer, Stephen; Mulac, Anthony J.; Donaldson, A. Burl; and Fox, Ronald L., to Enhanced Energy Systems. Direct contact low emission steam generating system and method utilizing a compact, multi-fuel burner. 4,498,542, Cl. 166-303.000.

Eisenlohr, Othmar: *See—*
Paulet, Jean-Francois; and Eisenlohr, Othmar, 4,498,967, Cl. 204-272.000.

Elbaek, Jorgen F., to Danavox A/S. Coupler for microtelephone set. 4,499,337, Cl. 179-27.00D.

Elder, Ivan R. Nipple, ring and cap dishwasher accessory. 4,498,594, Cl. 211-181.000.

Electric Power Research Institute, Inc.: *See—*
Nelson, Terry L.; and Reichman, James M., 4,498,813, Cl. 405-182.000.

Electronique Marcel Dassault: *See—*
Geesen, Michel, 4,499,589, Cl. 377-55.000.

Elitex, koncern textilniho strojirenstvi: *See—*
Pavek, Miloslav, 4,498,279, Cl. 57-22.000.
Pavek, Miloslav; and Hlubucek, Ladislav, 4,498,280, Cl. 57-22.000.

Ellington, Thomas S., IV: *See—*
Banks, Edward L.; Ellington, Thomas S., IV; and Kuyel, Birol, 4,499,162, Cl. 430-5.000.

El-Saie, Ahmed A., to Conoco Inc. Multipoint slurry injection junction. 4,498,819, Cl. 406-181.000.

Emenaker, Leo J.: *See—*
Barrus, Gordon B.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holzer, Gerold, 4,498,793, Cl. 400-320.000.

Emerson, Robert T.: *See—*
Brown, Albert E.; and Emerson, Robert T., 4,499,140, Cl. 428-308.400.

Emhart Industries, Inc.: *See—*
Balducci, Walter O.; and Miller, Theodore H., 4,498,319, Cl. 70-92.000.

Enami, Yasushi: *See—*
Muramatsu, Tateo; Kurihara, Mamoru; and Enami, Yasushi, 4,498,810, Cl. 405-115.000.

Encomech Product Development Limited: *See—*
Reed, Geoffrey R., 4,498,276, Cl. 53-588.000.

Encoyand, Roland C.: *See—*
Billard, Alain A.; Calmettes, Hubert C.; and Encoyand, Roland C., 4,498,392, Cl. 102-342.000.

Endoh, Eiji: *See—*
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,498,962, Cl. 204-129.000.

Enein, Mohamed: *See—*
Cafarella, Thomas; and Enein, Mohamed, 4,499,586, Cl. 375-98.000.

Energoinvest: *See—*
Izosimov, Dimitrij B.; and Sabanovic, Asif, 4,499,413, Cl. 318-802.000.

Energy Conversion Devices, Inc.: *See—*
Holmberg, Scott H.; and Flasck, Richard A., 4,499,557, Cl. 365-163.000.

Energy Innovations, Inc.: *See—*
Gourdine, Meredith C., 4,498,631, Cl. 239-692.000.

Engel, Dusan J.: *See—*
Malloy, Thomas P.; and Engel, Dusan J., 4,499,300, Cl. 562-495.000.

Engeler, William E.: *See—*
Mazin, Moshe; and Engeler, William E., 4,499,558, Cl. 365-182.000.

Engelhardt, Friedrich; Piesch, Steffen; Balzar, Juliane; and Dawson, Jeffery C., to Cassella Aktiengesellschaft; and Dresser Industries, Inc. Water soluble, crosslinkable polymer compositions, their preparation and use. 4,499,232, Cl. 524-548.000.

Engels, Walter, to Milliken Research Corporation. Pile fabric cutting device. 4,498,217, Cl. 26-9.000.

Englund, Rolf A.: *See—*
Schibbye, (Lars) Lauritz B.; and Englund, Rolf A., 4,498,849, Cl. 417-299.000.

Enhanced Energy Systems: *See—*
Eisenhawer, Stephen; Mulac, Anthony J.; Donaldson, A. Burl; and Fox, Ronald L., 4,498,542, Cl. 166-303.000.

Enomoto, Ryo; Yamauchi, Hidetoshi; and Tanikawa, Shoji, to Ibiden Co., Ltd. Silicon carbide substrates and a method of producing the same. 4,499,147, Cl. 428-428.000.

Enrique Garcia Associates: *See—*
Garcia, Enrique, 4,498,262, Cl. 52-173.00R.

Eoga, Anthony B. J., to Warner-Lambert Company. Controlled fade effervescing cleanser. 4,499,001, Cl. 252-99.000.

Epstein, Harry, to Kastar, Inc. Feeler gage mounting system. 4,498,239, Cl. 33-168.00R.

Ericksen, Donald J., to Donaldson Company, Inc. Filter apparatus including apparatus for clamping an air filter element in a filter housing. 4,498,914, Cl. 55-480.000.

Eriksen, Joern B.; and Radochonski, Pierre, to Tektronix, Inc. Image transfer method and apparatus. 4,499,501, Cl. 358-302.000.

Ernst, Richard E., to Du Pont de Nemours, E. I., and Company. Process for simultaneous hydrogenation of 2-butyne-1,4-diol and furan. 4,499,291, Cl. 549-429.000.

Erpelding, Edward J.: *See—*
Johnson, Elizabeth A., 4,498,615, Cl. 224-274.000.

Ertl, Wilhelm, to Siemens Aktiengesellschaft. Automatic insertion and removal device for components. 4,498,232, Cl. 29-741.000.

Essilor International: *See—*
Cuvilly, Jean-Pierre, 4,498,769, Cl. 356-244.000.

ESSO Resources Canada, Ltd.: *See—*
Aggour, Mohamed A.; and Banerjee, Sanjoy, 4,499,380, Cl. 250-390.000.

Estis, Leonard F., to Interferon Sciences, Inc. Method for purifying gamma-interferon. 4,499,014, Cl. 260-112.00R.

Etablissements Augier: *See—*
Nicolas, Jean-Pierre, 4,499,452, Cl. 340-310.00A.

Etat Francais: *See—*
Battais, Alain; Boutevin, Bernard J. L.; and Pietrasanta, Yves J. D., 4,499,022, Cl. 260-429.700.

Ethicon, Inc.: *See—*
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,498,476, Cl. 128-346.000.

Ethyl Corporation: *See—*
Shepherd, Lawrence H., Jr., 4,499,290, Cl. 549-354.000.
Stahly, Barbara C.; and Stahly, G. Patrick, 4,499,026, Cl. 260-465.00R.

Ethyl Molded Products Company: *See—*
Gross, Richard A., 4,498,899, Cl. 604-16.000.

Etienne LaCroix - Tous Artifices: *See—*
Billard, Alain A.; Calmettes, Hubert C.; and Encoyand, Roland C., 4,498,392, Cl. 102-342.000.

Eudy, Nancy H.: *See*—
Tomcufcik, Andrew S.; Meyer, Walter E.; and Eudy, Nancy H., 4,499,097, Cl. 514-341.000.
European Electronic Systems Ltd.: *See*—
Loose, Peter W., 4,499,383, Cl. 250-561.000.
Evana Tool & Engineering Inc.: *See*—
Fuchs, Gilbet; Crowley, Norman; and Wink, Randall, 4,498,397, Cl. 104-35.000.
Evanicky, Daniel E.: *See*—
Davies, David H.; and Evanicky, Daniel E., 4,499,477, Cl. 346-137.000.
Evans & Sutherland Computer Corp.: *See*—
Hintze, Richard A., 4,499,457, Cl. 340-703.000.
Evans, Thomas L., to General Electric Company. Solvent free preparation of diarylthioethers. 4,499,285, Cl. 548-461.000.
Everett, Thomas D. Buoyancy prime mover with pressure control means. 4,498,294, Cl. 60-496.000.
Everitt, Delmar K.: *See*—
Goldfarb, Adolph E.; and Everitt, Delmar K., 4,498,886, Cl. 446-202.000.
Evers, Johannes T. M.: *See*—
Verwer, Andreas N. J.; and Evers, Johannes T. M., 4,499,235, Cl. 525-38.000.
Evert, Karla R., to Stearns Manufacturing Company. Hybrid personal flotation device. 4,498,882, Cl. 441-115.000.
Ewing, Frank I.: *See*—
Leppelmeier, Elton T.; and Ewing, Frank I., 4,499,403, Cl. 313-487.000.
Ex-Cell-O Corporation: *See*—
Grace, Wallace C., 4,498,361, Cl. 76-101.00R.
Extracorporeal Medical Specialties, Inc.: *See*—
Skinner, Christopher A., 4,498,982, Cl. 210-9o.200.
Exxon Research & Engineering Co.: *See*—
DiNicolantonio, Arthur R.; and Wei, Victor K., 4,499,055, Cl. 422-197.000.
Eberly, Paul E., Jr., 4,498,979, Cl. 208-216.00R.
Foroulis, Z. Andrew, 4,499,003, Cl. 252-192.000.
Liu, Huei-Cheng; and Spohn, Ralph J., 4,499,317, Cl. 585-438.000.
Liu, Huei-Cheng, 4,499,318, Cl. 585-438.000.
Pine, Lloyd A.; and Cull, Neville L., 4,498,975, Cl. 208-114.000.
Vanderspurt, Thomas H.; Richard, Michael A.; and Montagna, Angelo A., 4,499,204, Cl. 502-301.000.
Wheelock, Kenneth S., 4,499,195, Cl. 502-63.000.
Ezawa, Sadaaki, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,498,364, Cl. 84-1.170.
Fabrique Nationale Herstal: *See*—
Kaiser, Georges J. L., 4,498,369, Cl. 89-198.000.
Fabriques de Tabac Reunies, S.A.: *See*—
Frattolillo, Antonio P. A., 4,498,487, Cl. 131-336.000.
Fagerburg, David R.; and McFarlane, Finley E., to Eastman Kodak Company. Process for the preparation of sulfo-modified polyesters. 4,499,262, Cl. 528-279.000.
Fairbanks, David W.: *See*—
Southgate, Peter D.; Fairbanks, David W.; Davis, Richard B.; and Beltz, John P., 4,498,779, Cl. 356-384.000.
Fairchild Camera & Instrument Corporation: *See*—
Howell, Paul J.; and Currier, Gregory B., 4,498,227, Cl. 29-576.00B.
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,498,638, Cl. 242-45.000.
Faison, Marilyn D. System for teaching visual discrimination of spatially oriented subject matter. 4,498,869, Cl. 434-184.000.
Falconieri, Remo, to Ing. C. Olivetti & C., S.p.A. Printing and/or correcting device for printing machines. 4,498,792, Cl. 400-214.000.
Falkvall, Thore E.: *See*—
Shaldon, Stanley; Christopherson, Kjell H. I.; Falkvall, Thore E.; and Mattisson, Ulf K., 4,498,990, Cl. 210-637.000.
Faltas, Mervat: *See*—
Yamazaki, Tsuneo; Faltas, Mervat; and Webb, Paul P., 4,499,483, Cl. 357-30.000.
Faludi, Arpad: *See*—
Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.
Fanuc Ltd: *See*—
Fujioka, Yoshiki; and Hirota, Mitsuhiko, 4,499,414, Cl. 318-803.000.
Obara, Haruki, 4,499,359, Cl. 219-69.00W.
Farb, Norman E., to Printronix, Inc. Print hammer mechanism having intermediate pivot fulcrum. 4,498,388, Cl. 101-93.040.
Farb, Norman E.: *See*—
Barrus, Gordon B.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holzer, Gerold, 4,498,793, Cl. 400-320.000.
Farmatis S.r.l.: *See*—
Scalesciani, Juan, 4,499,104, Cl. 514-396.000.
Farmer, Edward J. Flow compensated computing controller. 4,498,809, Cl. 405-92.000.
Farmitalia Carlo Erba S.p.A.: *See*—
Moro, Luigi; Maffione, Grazia; Neri, Guido; and Rigamonti, Alessandro, 4,499,066, Cl. 424-19.000.
Faro, John H.: *See*—
Intengan, Franklin S., 4,498,684, Cl. 280-234.000.
Farrell, Geoffrey, to Burroughs Wellcome Co. Perfume dispensing material. 4,499,012, Cl. 252-522.00A.
Favey, Charles: *See*—
Wartelle, Claude; and Favey, Charles, 4,498,799, Cl. 403-140.000.
Favreau, Michel; Bajon, Jean; and Soca, Serge, to Thomson-CSF. Device for correcting color information supplied by a television camera with a view to improving the perception of pictures. 4,499,486, Cl. 358-37.000.
Fedder, James L.; and Kandros, Michael A., to AMP Incorporated. Latch device for ZIF card edge connectors. 4,498,722, Cl. 339-75.0MP.
Federal Paper Board Co., Inc.: *See*—
Sutherland, Robert L., 4,498,618, Cl. 229-40.000.
Feinbloom, William, to Designs for Vision, Inc. Binocular field of view simulator. 4,498,743, Cl. 351-45.000.
Feintuch, Martin W.: *See*—
Aron, Mitchell; and Feintuch, Martin W., 4,499,491, Cl. 358-102.000.
Fellwock, Charles G.: *See*—
Fellwock, Louis W.; Hortin, Kenneth L.; and Fellwock, Charles G., 4,498,713, Cl. 312-214.000.
Fellwock, Louis W.; Hortin, Kenneth L.; and Fellwock, Charles G., to Whirlpool Corporation. Thermal stress relief in refrigerators. 4,498,713, Cl. 312-214.000.
Feniou, Claude: *See*—
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,499,090, Cl. 514-210.000.
Fentress, Vernon A.: *See*—
Campbell, Bruce D.; and Fentress, Vernon A., 4,498,732, Cl. 350-96.200.
Ferag AG: *See*—
Reist, Walter, 4,498,664, Cl. 271-204.000.
Ferguson, Edward J.: *See*—
Peper, Henry; Eaton, Thomas E.; and Ferguson, Edward J., 4,498,797, Cl. 401-141.000.
Fern, Derek T.; and Harrison, Gary E., to McDermott Incorporated. Underwater pipeline sealing apparatus. 4,498,811, Cl. 405-168.000.
Ferns, Derek, to Selflevel Covers (Jersey) Limited. Manhole/access cover and frame assemblies. 4,498,804, Cl. 404-25.000.
Ferrando Gorin, Guido: *See*—
Barcellona, Alessandro; Ferrando Gorin, Guido; and Lausarot, Aldo, 4,498,496, Cl. 137-599.000.
Ferris, Michael J.; Wise, Paul H.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Board game with a common piece having a spinner. 4,498,674, Cl. 273-243.000.
Feth, Georg; and Mills, John E., to McNeilab, Inc. Process for preparation of substituted formamidine and substituted N-iminomethyl piperidine. 4,499,274, Cl. 546-229.000.
Fiat Auto S.p.A.: *See*—
Barcellona, Alessandro; Ferrando Gorin, Guido; and Lausarot, Aldo, 4,498,496, Cl. 137-599.000.
Fiat Auto Spa.: *See*—
Iacoponi, Stefano; and Di Nunzio, Vittorio, 4,499,410, Cl. 318-444.000.
Ficca, Irene: *See*—
Donahue, Barbara S.; and Ficca, Irene, 4,498,613, Cl. 224-251.000.
Fiegen, Donald S.; and Ware, Chester D., to Trane Company, The. Method for pre-expanding heat exchanger tube. 4,498,220, Cl. 29-157.30C.
Fielding, Randy L., to Christy Machine Company. Material dispensing machine. 4,498,635, Cl. 241-94.000.
Fifolt, Michael J., to Occidental Chemical Corporation. Continuous process for preparing bisfluoroxydifluoromethane. 4,499,024, Cl. 260-453.00R.
Figueroa, Luisito A. Light reflector. 4,499,529, Cl. 362-283.000.
Finch, Dale E., to Abbott Laboratories. Intravenous monitoring system utilizing a dynamic reference threshold. 4,498,901, Cl. 604-65.000.
Findeisen, Kurt: *See*—
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.
Finger, Ulrich; Desprez, Pierre; and Ligneres, Pierre. Access arbitration system to several processors or microprocessors with a common bus. 4,499,538, Cl. 364-200.000.
Finkeldei, Ferdinand: *See*—
Heinze, Helmut; Wilhelm, Fritz; Mackensen, Klaus; and Finkeldei, Ferdinand, 4,499,261, Cl. 528-279.000.
Firmenich, SA: *See*—
Rautenstrauch, Valentin, 4,499,297, Cl. 560-231.000.
Fischer, Georg, to Texas Instruments Incorporated. Apparatus for aligning tubular transport containers having a substantially U-shaped hollow cross-section for DIL housing prior to the emptying of such transport containers. 4,498,574, Cl. 198-380.000.
Fischer, Klaus; Kroschel, Heinz; Nicodemus, Joachim; and Petters, Willi, to Dynamit Nobel Aktiengesellschaft. Process for the distribution of submunition. 4,498,393, Cl. 102-393.000.
Fischer, Willy G.; and Thom, Elmar, to Henschel Flugzeug-Werke AG. Apparatus for adjusting the track of rotor blades through remote control. 4,498,842, Cl. 416-155.000.
Fisher, James E., to United Technologies Corporation. Bushing securing apparatus. 4,498,790, Cl. 384-428.000.
Fishman, David S., to Rogers Corporation. Decoupling capacitor and method of manufacture thereof. 4,499,519, Cl. 361-306.000.
Fisons plc: *See*—
Bennion, Colin, 4,499,269, Cl. 544-198.000.
Fitoussi, Richard; Leveque, Alain; and Sabot, Jean-Louis, to Rhone-Poulenc S.A. Liquid/liquid extraction of acidic aqueous streams comprising sulfate/titanium/iron values. 4,499,058, Cl. 423-70.000.
Fives-Cail Babcock: *See*—
Cazaux, Joel, 4,498,821, Cl. 409-300.000.

Fix, James E.; and Crews, Gary A., to Atlantic Richfield Company. Method and apparatus for recording broad-band seismic data. 4,499,565, Cl. 367-49.000.
Flamm, Daniel L.: *See—*
Cook, Joel M.; Donnelly, Vincent M.; Flamm, Daniel L.; Ibbotson, Dale E.; and Mucha, John A., 4,498,953, Cl. 156-646.000.
Flanagan, Robert M., to Amerace Corporation. Reflector structure. 4,498,733, Cl. 350-102.000.
Flasck, Richard A.: *See—*
Holmberg, Scott H.; and Flasck, Richard A., 4,499,557, Cl. 365-163.000.
Fletcher, James D. Release device. 4,498,448, Cl. 124-35.00A.
Flocchini, Andrew J. Backwash valve and system for teat cup assembly. 4,498,419, Cl. 119-14.180.
Flonic S.A.: *See—*
Rose, Rene, 4,499,371, Cl. 235-492.000.
Flores, Manuel. Anti-pollutant spark plug adaptor. 4,499,399, Cl. 313-143.000.
Flynn, A. John: *See—*
Deal, Carl H.; and Flynn, A. John, 4,498,911, Cl. 55-32.000.
Fohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., to GTE Products Corporation. Metal halide arc discharge lamp with means for suppressing convection currents within the outer envelope and methods of operating same. 4,499,396, Cl. 313-25.000.
Fohlen, George M.: *See—*
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,499,260, Cl. 528-229.000.
Foley, John T.: *See—*
Bilstad, Arnold C.; Foley, John T.; and Woodworth, Walker P., 4,498,983, Cl. 210-97.000.
Fontana, Alberto; Fontanelli, Renzo; Sacrini, Egeo; and Cicchetti, Osvaldo. Salts of aminic organic peroxides. 4,499,273, Cl. 546-188.000.
Fontanelli, Renzo: *See—*
Fontana, Alberto; Fontanelli, Renzo; Sacrini, Egeo; and Cicchetti, Osvaldo, 4,499,273, Cl. 546-188.000.
Foos, Joseph S., to EIC Laboratories, Inc. Electrochemical cell using dimethoxymethane and/or trimethoxymethane as solvent for electrolyte. 4,499,161, Cl. 429-196.000.
Ford Aerospace & Communications Corporation: *See—*
Luh, Howard H., 4,499,471, Cl. 343-373.000.
Ford Motor Company: *See—*
Hawlitzki, Christian, 4,499,528, Cl. 362-275.000.
Schechter, Michael M., 4,498,625, Cl. 239-5.000.
Forenade Fabriksverken: *See—*
Regebro, Christer, 4,498,394, Cl. 102-489.000.
Formica Corporation: *See—*
Blasing, Elmer P.; Keeling, Ronald J.; and Roe, Jin-Young K., 4,499,125, Cl. 428-503.000.
Foroulis, Z. Andrew, to Exxon Research & Engineering Co. Antimony-molybdenum salt corrosion inhibitor composition. 4,499,003, Cl. 252-192.000.
Fort, Edward S. Lids for pressure vessels. 4,498,601, Cl. 220-256.000.
Forte, Paulino, to Union Carbide Corporation. Separation of aromatic and nonaromatic components in mixed hydrocarbon feeds. 4,498,980, Cl. 208-321.000.
Foster, Terry L.: *See—*
Proctor, David R.; and Foster, Terry L., 4,498,782, Cl. 356-436.000.
Foster Wheeler Energy Corporation: *See—*
Diggins, Joseph P., 4,498,339, Cl. 73-432.00R.
Fox, Ronald L.: *See—*
Eisenhawer, Stephen; Mulac, Anthony J.; Donaldson, A. Burl; and Fox, Ronald L., 4,498,542, Cl. 166-303.000.
Framatome & Cie.: *See—*
Castrec, Yves-Marie; and Launay, Jean-Pierre, 4,499,046, Cl. 376-245.000.
Leroy, Jean-Luc; and Dejeux, Pol, 4,498,426, Cl. 122-32.000.
Frame, Robert R., to UOP Inc. Catalytic oxidation of mercaptan in petroleum distillate. 4,498,977, Cl. 208-207.000.
Frame, Robert R., to UOP Inc. Catalytic oxidation of mercaptan in petroleum distillate. 4,498,978, Cl. 208-207.000.
France Bed Co., Ltd.: *See—*
Masuda, Teruo; Abe, Takeo; and Koike, Matsuhiro, 4,498,477, Cl. 128-378.000.
Franchini, Mauro; Sarasso, Angelo; and Puccetti, Angelo, to Weber S.P.A. Carburetor fitted with electromagnetic devices for intercepting the flow of fuel during accelerator release. 4,498,439, Cl. 123-438.000.
Francis, Thomas L.: *See—*
Phelps, Frankie E.; Francis, Thomas L.; and LaCamera, Alfred F., 4,499,193, Cl. 501-98.000.
Franck, Gerhard: *See—*
Rake, Heinrich; Herchenbach, Horst; Jager, Gernot; and Franck, Gerhard, 4,498,930, Cl. 106-100.000.
Franckx, Joris: *See—*
Moisson, Marc; Van Noten, Lodewijk; Overbergh, Noel; Franckx, Joris; and Buekers, Valere, 4,498,938, Cl. 156-49.000.
Frank, Amalie J., to AT&T Bell Laboratories. Rapid generation of discrete random variates from general distributions. 4,499,551, Cl. 364-717.000.
Fraser, Alexander G., to AT&T Bell Laboratories. Multiplexed first-in, first-out queues. 4,499,576, Cl. 370-60.000.
Frattolillo, Antonio P. A., to Fabriques de Tabac Reunies, S.A. Rod-like smoking article with secondary air channels and apparatus for producing such an article. 4,498,487, Cl. 131-336.000.
Fredrick, Michael Douglas: *See—*
Lovitt, Robert O., 4,498,421, Cl. 119-17.000.
Frequency and Time Systems, Inc.: *See—*
Garvey, Robert M., 4,499,433, Cl. 331-3.000.
Frevert, Robert E., to Crippen Manufacturing Co., Inc. Vibrating anti-blinding cleaning and grading machines. 4,498,981, Cl. 209-243.000.
Friedman, Theodore D.: *See—*
Casey, Richard G.; and Friedman, Theodore D., 4,499,596, Cl. 382-37.000.
Friend, Barbara L., legal representative: *See—*
Mihalakis, Agis I., deceased; and Friend, Barbara L., legal representative, 4,498,734, Cl. 350-125.000.
Friese, Axel, to Dr. Carl Hahn G.m.b.H. Apparatus for transmitting a tampon blank to a tampon press. 4,498,218, Cl. 28-119.000.
Friesen, David. Harvester swath pick-up drive. 4,498,278, Cl. 56-364.000.
Fritschi, Edgar: *See—*
Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.
Froes, Francis H.: *See—*
Smith, Paul R.; and Froes, Francis H., 4,499,156, Cl. 428-614.000.
Frolke, Wilhelm: *See—*
Traunecker, Werner; Frolke, Wilhelm; Kreuzer, Heinrich; and Kollmer, Hans P., 4,499,106, Cl. 514-603.000.
Fromm, Ellsworth H.: *See—*
Schirmer, Robert M.; and Fromm, Ellsworth H., 4,498,287, Cl. 60-39.020.
Frost, Paul T.; and Thomas, Robert T., to Frost, Paul T. Hydraulic oil counting device and water separator. 4,499,376, Cl. 250-341.000.
Fuchs, Gilbet; Crowley, Norman; and Wink, Randall, to Evana Tool & Engineering Inc. Conveyor transfer mechanism. 4,498,397, Cl. 104-35.000.
Fuderer, Andrija, to Union Carbide Corporation. Activated carbon adsorbent with increased heat capacity and the production thereof. 4,499,208, Cl. 502-415.000.
Fuji Electric Co., Ltd.: *See—*
Hino, Kazuhiko, 4,498,205, Cl. 5-449.000.
Tanaka, Nobuyasu; Ohashi, Mitunari; and Iwamoto, Shohzoh, 4,498,569, Cl. 193-27.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Hara, Kazuo, 4,498,359, Cl. 74-850.000.
Kitade, Nobumitsu, 4,498,353, Cl. 74-606.00R.
Makita, Fujio, 4,499,450, Cl. 340-52.00R.
Ohgami, Masaaki; and Nakamura, Mitsuo, 4,498,441, Cl. 123-440.000.
Shibano, Kenji, 4,499,032, Cl. 261-72.00R.
Fuji Photo Film Co., Ltd.: *See—*
Hirai, Hiroyuki; and Sato, Kozo, 4,499,172, Cl. 430-203.000.
Hirai, Hiroyuki; and Kawata, Ken, 4,499,180, Cl. 430-559.000.
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,499,167, Cl. 430-83.000.
Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, 4,499,178, Cl. 430-495.000.
Yabe, Masao; Naruo, Kyoichi; and Ono, Kazuhiro, 4,499,043, Cl. 264-207.000.
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.
Yamamoto, Nobuyuki, 4,499,138, Cl. 428-216.000.
Fuji Photo Optical Co., Ltd.: *See—*
Inuiya, Masafumi; and Murakoshi, Makoto, 4,499,547, Cl. 364-571.000.
Saburo, Numata, 4,499,406, Cl. 315-57.000.
Fuji Xerox Co., Inc.: *See—*
Inui, Toshiharu; Kurata, Masami; Nakajima, Hisao; and Ohmori, Takashi, 4,499,476, Cl. 346-76.0PH.
Fuji Xerox Co., Ltd.: *See—*
Takahashi, Izumi; Nakayama, Kenichiro; Sugiyama, Terumasa; and Suzuki, Takanobu, 4,499,580, Cl. 371-17.000.
Fujii, Akira, to NEC Corporation. Automatic level control circuit. 4,499,430, Cl. 330-279.000.
Fujii, Takayuki; and Tanaka, Norio, to Honda Giken Kogyo Kabushiki Kaisha. Ventilator for two- or three-wheeled vehicle. 4,498,700, Cl. 296-78.100.
Fujiki, Satoshi: *See—*
Tanino, Katsumi; Fujiki, Satoshi; and Okamoto, Shinzi, 4,499,010, Cl. 252-512.000.
Fujino, Shinji: *See—*
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.
Fujioka, Yoshiki; and Hirota, Mitsuhiko, to Fanuc Ltd. AC Motor control method. 4,499,414, Cl. 318-803.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,499,088, Cl. 514-202.000.
Fujita, Kiyoshi; Toyohisa, Shirou; Katou, Osamu; and Ishimaru, Kenji, to Kabushiki Kaisha Kobe Seiko Sho. Scraping mechanism. 4,498,988, Cl. 210-397.000.
Fujita, Teizo; and Kimura, Haruo, to Izumi Denki Corporation. Adapter for mounting switch onto panel. 4,499,352, Cl. 200-296.000.
Fujitsu Limited: *See—*
Isozumi, Shoji; and Kusunoki, Toshihiro, 4,498,937, Cl. 148-171.000.

Kurafuji, Setsuo, 4,499,559, Cl. 365-190.000.
Tanaka, Toshiaki; Fukai, Masao; Onuma, Tatsuro; and Kinoshita, Ryohei, 4,498,256, Cl. 40-475.000.
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, 4,499,484, Cl. 357-68.000.

Fujiyama, Masaaki: *See*—
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.

Fukai, Masao: *See*—
Tanaka, Toshiaki; Fukai, Masao; Onuma, Tatsuro; and Kinoshita, Ryohei, 4,498,256, Cl. 40-475.000.

Fukatsu, Shunzo: *See*—
Minowa, Nobuto; Fukatsu, Shunzo; Tachibana, Kunitaka; Niida, Taro; and Mase, Sadaaki, 4,499,027, Cl. 260-502.50G.

Fukushima, Kiyoshi: *See*—
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.

Fukuta, Toshiaki: *See*—
Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, 4,498,989, Cl. 210-450.000.

Full, Donald A., to Philip Morris Incorporated. Heated die for carbonized material. 4,498,858, Cl. 425-466.000.

Fuller Company: *See*—
Nelson, Jeffrey A.; and Hanstine, Kenneth W., 4,498,634, Cl. 241-72.000.

Fulwyler, Mack J., to Becton, Dickinson and Company. Apparatus for distinguishing multiple subpopulations of cells. 4,499,052, Cl. 422-52.000.

Fung, Steven: *See*—
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, 4,499,310, Cl. 568-634.000.

Furukawa Battery Co., Ltd., The: *See*—
Watanabe, Yasushi; Suzuki, Yuichi; Nagata, Yukihiro; and Hoshino, Kiyotaka, 4,498,519, Cl. 164-417.000.

Furukawa Electric Co., Ltd., The: *See*—
Watanabe, Yasushi; Suzuki, Yuichi; Nagata, Yukihiro; and Hoshino, Kiyotaka, 4,498,519, Cl. 164-417.000.

Futaire Limited: *See*—
Toll, Ian C., 4,498,649, Cl. 244-118.600.

G. D. Searle & Co.: *See*—
Baran, John S.; and Liang, Chi-Dean, 4,499,289, Cl. 549-292.000.
Collins, Paul W.; and Gasiecki, Alan F., 4,499,296, Cl. 560-118.000.
Mueller, Richard A.; and Partis, Richard A., 4,499,295, Cl. 560-53.000.

Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., to Eastman Kodak Company. Color-forming sulfonamidodiphenylamines and corresponding sulfonimide dyes. 4,499,304, Cl. 564-92.000.

Gadberry, Donald L.: *See*—
Kranz, Max L.; and Gadberry, Donald L., 4,498,471, Cl. 128-204.260.

Gadbois, Gerald W.: *See*—
Whitely, Elliot F.; Devoe, Richard A.; and Gadbois, Gerald W., 4,499,134, Cl. 428-102.000.

Gaffney, Anne M., to Atlantic Richfield Company. Methane conversion. 4,499,323, Cl. 585-500.000.

Gaffney, Anne M., to Atlantic Richfield Company. Methane conversion. 4,499,324, Cl. 585-500.000.

Gage, Bobby D.: *See*—
Pittman, Homer F.; and Gage, Bobby D., 4,498,845, Cl. 417-545.000.

Gageur, Fritz; and Wohlgenannt, Horst, to Lindauer Dornier Gesellschaft mbH. Apparatus for treating lengths of materials with a gaseous medium. 4,498,250, Cl. 34-155.000.

Gahan, Geoffrey D., to Mouldmaking Design Centre Limited. Injection molding apparatus having a sprue holder with an inclined retractable ram. 4,498,860, Cl. 425-562.000.

Gainsboro, Leon; and Latham, Peter A., to OPUS, Inc. Bird feeder. 4,498,423, Cl. 119-51.00R.

Galabov, Angel S.; and Mastikova, Margarita H., to Dso "Pharmachim". Interferon induction method. 4,499,093, Cl. 514-258.000.

Galiasso, Roberto: *See*—
Arias, Beatriz; Kum, Humberto; and Galiasso, Roberto, 4,499,202, Cl. 502-211.000.

Galie, Louis M.: *See*—
Dickinson, Robert V.; Galie, Louis M.; and Snow, Craig A., 4,499,553, Cl. 364-900.000.

Gall, Winrich; and Wellendorf, Klaus, to Dr. Ing. Rudolf Hell GmbH. Production of screen printing blocks. 4,499,489, Cl. 358-75.000.

Gallagher, David A.: *See*—
Juris, Mitchell A.; and Gallagher, David A., 4,498,719, Cl. 339-60.00R.

Gambro Lundia AB: *See*—
Shaldon, Stanley; Christopherson, Kjell H. I.; Falkvall, Thore E.; and Mattisson, Ulf K., 4,498,990, Cl. 210-637.000.

Ganczak, Edward G.: *See*—
Chaplin, John B.; and Ganczak, Edward G., 4,498,873, Cl. 440-82.000.

Ganea, Doina: *See*—
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., 4,499,186, Cl. 435-23.000.

Ganellin, Charon R.: *See*—
Durant, Graham J.; and Ganellin, Charon R., 4,499,101, Cl. 514-374.000.

Ganser, Volker: *See*—
Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.

Gantz, Marvin E., Jr.: *See*—
Bowman, Kenneth A.; and Gantz, Marvin E., Jr., 4,498,523, Cl. 164-477.000.

Garbis, Dennis: *See*—
Hill, Lawrence B.; Garbis, Dennis; Heller, Robert C.; and Granata, Amedeo J., 4,499,354, Cl. 219-10.49R.

Garces, Juan M., to Dow Chemical Company, The. Alkylation process employing magnesium silicate compositions. 4,499,320, Cl. 585-467.000.

Garcia, Enrique, to Enrique Garcia Associates. Solar shield assembly. 4,498,262, Cl. 52-173.00R.

Garenfeld, Andreas J.: *See*—
Dijkstra, Kees; and Garenfeld, Andreas J., 4,498,296, Cl. 60-521.000.

Garren, Frederick G. Medication for treatment of poison oak irritation and inflammation. 4,499,086, Cl. 424-195.100.

Garrett, Luther W., Jr., to Petro-Williams Service Company. Process for treating contaminated transformer oil. 4,498,992, Cl. 210-664.000.

Garska, Daniel C.; and Lok, Brent M., to Union Carbide Corporation. Conversion of certain hydrocarbons using silicoaluminophosphate catalysts. 4,499,315, Cl. 585-415.000.

Garska, Daniel C.; and Tellis, Cyril B., to Union Carbide Corporation. Conversion of effluent hydrocarbons streams using aluminophosphate catalysts. 4,499,316, Cl. 585-415.000.

Garskamp, Arnoldus, to U.S. Philips Corporation. FM-Receiver using a ratio detector with silicon diodes. 4,499,605, Cl. 455-210.000.

Garton, John W., to Access Engineering Ltd. Vertically movable, road towable work platform. 4,498,556, Cl. 182-19.000.

Garvey, Robert M., to Frequency and Time Systems, Inc. Autolock for resonators for frequency standards. 4,499,433, Cl. 331-3.000.

Gasiecki, Alan F.: *See*—
Collins, Paul W.; and Gasiecki, Alan F., 4,499,296, Cl. 560-118.000.

Gaspar, Alexander M.: *See*—
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., 4,499,186, Cl. 435-23.000.

Gassman, Max P., to Deere & Company. Stroke control valve. 4,498,846, Cl. 417-214.000.

Gateway Industries, Inc.: *See*—
Doty, Gerald A., 4,498,642, Cl. 242-107.40A.

Gavrin, Edward S.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.

Gaz de France: *See*—
Guilhem, Jean R., 4,498,304, Cl. 62-49.000.

GC Industries: *See*—
Chand, Ramesh, 4,498,970, Cl. 204-415.000.

Gearhart, Gordon E., to E.V. Camp Steel Works, Inc. Chain link. 4,498,284, Cl. 39-84.000.

Gebruder Buhler AG: *See*—
Oetiker, Hans; and Kummer, Emanuel, 4,499,111, Cl. 426-231.000.

Geekie, James A., Jr. Cartridge and shotgun shell carrying buckle. 4,498,612, Cl. 224-163.000.

Geesen, Michel, to Electronique Marcel Dassault. Counter circuit for counting high frequency pulses using the combination of a synchronous and an asynchronous counter. 4,499,589, Cl. 377-55.000.

Gemma, Kazutoshi; and Ishibashi, Michiyasu, to Hitachi, Ltd. Signal transfer timing control using stored data relating to operating speeds of memory and processor. 4,499,536, Cl. 364-200.000.

GenCorp Inc.: *See*—
Brown, Robert L.; Henley, Virgil E.; and Kovalchik, Stephen J., 4,498,948, Cl. 156-401.000.

General Dynamics, Pomona Division: *See*—
Marshall, George C., Jr., 4,499,120, Cl. 427-123.000.

General Electric Company: *See*—
Anderson, John M.; and Johnson, Peter D., 4,499,400, Cl. 313-265.000.
Anthony, Blair T.; and LeGrand, Donald G., 4,499,224, Cl. 524-261.000.
Bitting, Ricky F.; Peil, William; Brown, Thomas A.; and Guzek, William K., 4,499,408, Cl. 318-254.000.
Brines, Marjorie J.; and Rabatin, Jacob G., 4,499,159, Cl. 428-691.000.
Castonguay, Roger N.; and Powell, David B., 4,499,344, Cl. 200-50.00C.
Cichanowski, Stanley W., 4,499,520, Cl. 361-311.000.
Cline, Harvey E., 4,498,923, Cl. 75-65.0ZM.
Cline, Harvey E., 4,498,924, Cl. 75-65.0ZM.
Cline, Harvey E., 4,498,925, Cl. 75-65.0ZM.
Cline, Harvey E., 4,498,926, Cl. 75-65.0ZM.
Dietz, Peter W.; and Wood, Ralph T., 4,499,118, Cl. 427-28.000.
Evans, Thomas L., 4,499,285, Cl. 548-461.000.
Graves, James A.; and Reiling, Gilbert H., 4,499,401, Cl. 313-315.000.
Green, Robert W.; and Grey, Delton A., Jr., 4,499,152, Cl. 428-448.000.
James, William G., 4,49 ,397, Cl. 313-112.000.
Klein, Artur, 4,498,450, Cl. 125-16.00R.
Leppelmeier, Elton T.; and Ewing, Frank I., 4,499,403, Cl. 313-487.000.

Lockhart, Thomas P., 4,499,229, Cl. 524-450.000.
Lockhart, Thomas P., 4,499,230, Cl. 524-450.000.
Masaitis, William; and Canada, Robert O., 4,499,595, Cl. 382-9.000.
Mazin, Moshe; and Engeler, William E., 4,499,558, Cl. 365-182.000.
Payne, Thomas R., 4,499,368, Cl. 219-452.000.
Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, 4,499,234, Cl. 524-783.000.
Pustell, Robert A., 4,499,330, Cl. 136-230.000.
Ray, John M., III; and Martin, Robert J., 4,499,550, Cl. 364-606.000.
Rubinstein, Israel, 4,498,960, Cl. 204-1.00T.
Spiro, Clifford L.; and Lamby, Edward J., 4,499,311, Cl. 568-660.000.
Sutherland, George H., 4,498,890, Cl. 474-140.000.
Tarnay, Denes, 4,499,526, Cl. 362-263.000.
Vogt, Robert L., 4,498,288, Cl. 60-39.060.
Walsh, LaVerne E., 4,499,404, Cl. 313-579.000.

General Electrodynamics Corp.: *See*—
Menon, Narendranath, 4,498,550, Cl. 177-209.000.

General Instrument Corp.: *See*—
Hill, Lawrence B.; Garbis, Dennis; Heller, Robert C.; and Granata, Amedeo J., 4,499,354, Cl. 219-10.49R.

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Brademeyer, David L., 4,498,293, Cl. 60-562.000.
Duffield, Thomas P.; and Winnale, James A., 4,498,689, Cl. 280-803.000.
Smith, Paul R., 4,498,776, Cl. 356-375.000.

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Right, Robert W., 4,499,453, Cl. 340-326.000.
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Genest, Leonard J.: *See*—
McGlone, William E.; and Genest, Leonard J., 4,498,697, Cl. 293-128.000.

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Brieger, Emmet F.; George, Flint R.; and Colle, Edward A., Jr., 4,498,541, Cl. 166-297.000.

George, Flint R.: *See*—
Brieger, Emmet F.; George, Flint R.; and Colle, Edward A., Jr., 4,498,541, Cl. 166-297.000.

George P. Johnson Co.: *See*—
Vallee, Robert G., 4,498,398, Cl. 104-44.000.

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Gereg, Gordon A. Variable stiffness tracheal tube. 4,498,473, Cl. 128-207.150.

Gergo, Gyorgy; Nemeth, Jozsef; Sebestyen, Bela; and Solymossy, Bela, to Mecseki Szenbanyak. Explosive mine breaking apparatus with arc-suppressing heat-dissipating fluid around the charge bodies. 4,498,391, Cl. 102-312.000.

Gerster, John F., to Riker Laboratories, Inc. Substituted pyridoquinoxaline-6-carboxylic acids and derivatives thereof. 4,499,270, Cl. 544-344.000.

Getz, Edward J.; and Lombardi, Gerald T., to North American Philips Electric Corp. Lamp bulb carton, and resulting lamp bulb package. 4,498,580, Cl. 206-418.000.

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Bernard, Michel; Balde, Daniel; Ghenassia, Elie; and Laumain, Francois, 4,499,222, Cl. 524-123.000.

Giacoletto, Lawrence J., to Heiser, Carol G., a part interest. Homopolar alternator electromechanical power conversion machine. 4,499,392, Cl. 310-178.000.

Gibb, Thomson B., to Vacuum Furnace System Corporation. Heating element arrangement for a vacuum furnace. 4,499,369, Cl. 219-552.000.

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Gibson, David C. Space-defining mounting for room coolers. 4,498,374, Cl. 98-94.200.

Gilb, Tyrell T., to Simpson Strong-Tie Company, Inc. Ridge rafter connector. 4,498,801, Cl. 403-232.100.

Gilbert, Don M., to Texas Instruments Incorporated. Printer having improved stored energy printhead. 4,498,791, Cl. 400-124.000.

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Gillette Company, The: *See*—
Jacobson, Chester F., 4,498,235, Cl. 30-47.000.
Krafton, Thomas J., 4,499,069, Cl. 424-66.000.
Peper, Henry; Eaton, Thomas E.; and Ferguson, Edward J., 4,498,797, Cl. 401-141.000.

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Sitzmann, Michael E.; and Gilligan, William H., 4,499,309, Cl. 568-590.000.

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Giuliani, Robert L.; Giuliani, Karen A.; and Giuliani, Mark A., 4,498,430, Cl. 123-58.00R.

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Young, Roy E.; Stricklin, Douglas K.; and Givens, Henry M. W., 4,498,554, Cl. 180-236.000.

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Glore, Thomas G., to Singer Company, The. Free floating actuating sleeve for keyless chuck. 4,498,682, Cl. 279-1.00K.

Gluschenko, Anatoly D.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Gockel, Judith. Lost circulation drilling fluid. 4,498,995, Cl. 252-8.5LC.

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Sanders, Maurice R., 4,498,561, Cl. 188-36.000.

Gohda, Seiichi; and Ishiguro, Mamoru, to Sony Corporation. Tape position control apparatus. 4,499,509, Cl. 360-72.100.

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Goldman, Ernest A.; McCarthy, Jeremiah P.; and Poppert, Paul E., to GTE Laboratories Incorporated. Method of fabrication of monolithic integrated circuit structure. 4,498,223, Cl. 29-571.000.

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James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., 4,499,154, Cl. 428-494.000.

Goldstein, David: *See*—
Ilardi, Joseph M.; and Goldstein, David, 4,498,706, Cl. 299-5.000.

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Goldsworthy, William B., 4,498,941, Cl. 156-148.000.

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Pusineri, Christian; and Goletto, Jean, 4,499,124, Cl. 427-385.500.

Goodale, Robert H.; and DuJack, James M., to Canton Bio-Medical Products, Inc.; and Visilox Systems, Inc. Composite materials of silicone elastomers and polyolefin films, and method of making. 4,499,148, Cl. 428-447.000.

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Skolnick, Saul; and Goodman, Albert, 4,498,367, Cl. 86-1.00R.

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Takeda, Susumu; Mann, Allen W.; Goodrich, David G.; and Zinniger, Theodore C., 4,498,521, Cl. 164-453.000.

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Jalics, George, 4,499,248, Cl. 526-173.000.
Maathuis, Antonnis G.; and Parsons, Anthony W., 4,498,514, Cl. 152-356.00R.
Massey, Fred L.; and Callander, Douglas D., 4,499,226, Cl. 524-382.000.
Wraight, Frederick G., 4,498,281, Cl. 57-58.340.

Gordon, Eric M.; and Weller, Harold N., III, to E. R. Squibb & Sons, Inc. Carboxy and substituted carboxy alkanoyl and cycloalkanoyl peptides. 4,499,079, Cl. 514-2.000.

Gordon, Marvin; and Lichtenstein, Joseph, to Whitman Medical Corporation. Surgical scrub. 4,498,796, Cl. 401-132.000.

Gordon, Robert L.; Alba, Andrew J.; Bodary, Michael; and Mesquida-Feirman, Barbara, to International Paper Company. Denesting paperboard container. 4,498,585, Cl. 206-518.000.

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Gotaverken Arendal AB: *See*—
Liden, Hadar, 4,498,412, Cl. 114-264.000.

Goto, Tetsuro, to Nippon Kogaku K.K. Display device for camera. 4,498,751, Cl. 354-289.100.

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Asano, Hiroshi; Shimamune, Takayuki; and Goto, Toshiki, 4,498,942, Cl. 156-151.000.

Gotou, Hitoshi: *See*—
Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, 4,499,390, Cl. 310-88.000.

Gould Inc.: *See*—
Miltonberger, Thomas W., 4,499,610, Cl. 455-619.000.

Gourdine, Meredith C., to Energy Innovations, Inc. Electrogasdynamic coating system. 4,498,631, Cl. 239-692.000.

Grable, Jack W. Electric circuit interrupter. 4,499,448, Cl. 337-370.000.

Grace, Wallace C., to Ex-Cell-O Corporation. Broach manufacturing method. 4,498,361, Cl. 76-101.00R.

Graetz, Reinhard, to Hoechst Aktiengesellschaft. Wire rope having a durable marker. 4,498,282, Cl. 57-218.000.

Graham, Patricia A.: *See*—
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,499,304, Cl. 564-92.000.

Gramm, Ronald J. Glazing material. 4,498,455, Cl. 126-417.000.

Granata, Amedeo J.: *See*—
Hill, Lawrence B.; Garbis, Dennis; Heller, Robert C.; and Granata, Amedeo J., 4,499,354, Cl. 219-10.49R.

Grantham, LeRoy F.; and Heath, Norman W., to Rockwell International Corporation. Fluid flow measuring. 4,498,347, Cl. 73-861.660.

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Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, 4,499,080, Cl. 514-12.000.

Grassi, Fabrizio; and Iannarelli, Luigi, to Prima Progetti S.p.A. Automatic device for tightening bolts. 4,498,545, Cl. 173-43.000.

Graves, James A.; and Reiling, Gilbert H., to General Electric Company. Triple coil incandescent filament. 4,499,401, Cl. 313-315.000.

Green, Robert W.; and Grey, Delton A., Jr., to General Electric Company. Metal-clad laminate construction. 4,499,152, Cl. 428-448.000.

Greenberg, M. Barry, to Guim Multi-Tech Corporation. Blade terminal fuses with integrity indicator. 4,499,447, Cl. 337-266.000.

Greene, Richard F., to United States of America, Navy. Heterojunction Schottky gate MESFET with lower channel ridge barrier. 4,499,481, Cl. 357-22.000.

Gregory, Jack T., to Gregory Tool Systems, Inc. Hydraulic log splitter. 4,498,293, Cl. 60-478.000.

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Seymour, Shaun A.; and Greiner, James G., 4,498,830, Cl. 414-24.600.

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Greslin, Bernard P.; and Rohmer, Daniel J., to Manufacture de Machines du Haut-Rhin. Automatic apparatus for fitting objects into receptacles. 4,498,234, Cl. 29-785.000.

Gresse, Herve R.; and Carn, Annick R., to Compagnie de Materiel de Micrographie "C.M.M.". Stereoscopic viewer. 4,498,735, Cl. 350-138.000.

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Green, Robert W.; and Grey, Delton A., Jr., 4,499,152, Cl. 428-448.000.

Grib, Boris F., to Philamon, Inc. Motion amplitude regulator with breaking pulse regulation. 4,499,436, Cl. 331-116.00M.

Griffin, Brian P.: *See*—
Blundell, David J.; Griffin, Brian P.; and MacDonald, William A., 4,499,256, Cl. 528-172.000.

Griffin, Robert B. Method and apparatus for producing visual patterns with lenticular sheets. 4,498,736, Cl. 350-167.000.

Grimmer, Horst; and Lunz, Alfred-Gunther, to Diehl GmbH & Co. Escapement for a timer. 4,498,788, Cl. 368-106.000.

Groeneboer, Hendrik: *See*—
Steinmetz, Anthony; Arnold, Jacobus J.; Verweg, Fransiscus G. C.; and Groeneboer, Hendrik, 4,498,727, Cl. 339-278.00C.

Grof, Gyula: *See*—
Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.

Grondman, Alexander, to Shell Oil Company. Apparatus for vaporization of a heavy hydrocarbon feedstock with steam. 4,498,629, Cl. 239-434.500.

Grosbois, Jean; Jacubert, Serge; and Verdier, Jean-Michel, to Rhone-Poulenc Specialities Chimiques. Preparation of silane, SiH_4. 4,499,063, Cl. 423-347.000.

Gross, Richard A., to Ethyl Molded Products Company. Tampon applicator. 4,498,899, Cl. 604-16.000.

Gross, William H.; and Sakurai, Tadashi, to National Semiconductor Corporation. Low voltage op amp bias optimizer. 4,499,432, Cl. 330-296.000.

Grudkowski, Thomas W., to United Technologies Corporation. Low reflectivity electrodes in semiconductive SAW devices. 4,499,440, Cl. 333-151.000.

Gruner, Heiko, to Robert Bosch GmbH. Temperature sensor for determining mass transfer rate and/or temperature rate of a flowing medium. 4,498,337, Cl. 73-204.000.

Gruner, Ronald H.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.

GTE Automatic Electric Inc.: *See*—
Krikor, Agop K.; and Puccini, Sergio E., 4,499,336, Cl. 179-18.0ES.

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Reimer, William A., 4,498,717, Cl. 339-17.0LM.

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Goldman, Ernest A.; McCarthy, Jeremiah P.; and Poppert, Paul E., 4,498,223, Cl. 29-571.000.
McColl, James R.; and Peters, Thomas E., 4,499,005, Cl. 252-301.60S.

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Bouchard, Andre C.; and Hall, Harold H., Jr., 4,498,883, Cl. 445-28.000.
Claes, Roger G., 4,499,439, Cl. 333-142.000.
Fohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., 4,499,396, Cl. 313-25.000.

Guarr, David. Storage device for spare tire. 4,498,614, Cl. 224-273.000.

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Csiki, Kalman, 4,498,469, Cl. 128-152.000.

Gunnewig, Hubert, to Westfalia Separator AG. Centrifuge with a self-emptying drum. 4,498,897, Cl. 494-27.000.

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Guzek, William K.: *See*—
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Haas, Gunther; and Weber, Georg, to Merck Patent Gesellschaft mit beschrankter Haftung. Liquid crystal dielectrics, new dyestuffs useful therein, processes for their preparation, and electrooptical display elements based thereon. 4,499,004, Cl. 252-299.100.

Hagedorn, Myrna L.: *See*—
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Hagen, Glenn E., to Hagen Medical Equipment Corporation. Erectile prosthesis. 4,498,465, Cl. 128-79.000.

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Hahn, Granville J.; Rutledge, Raleigh N.; and Murley, Jackie D., to Cosden Technology, Inc. Coextrusion process for producing multiple layered thermoplastic pipe. 4,499,041, Cl. 264-173.000.

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Halkey-Roberts Corporation: *See*—
Burr, J. Kelsey, 4,498,879, Cl. 441-80.000.
Mackal, Glenn H.; and TenBarge, John S., 4,498,605, Cl. 222-5.000.

Hall, Charles B.; McBride, Edward D.; and Young, Robert F., to Outboard Marine Corporation. Hydraulic system for marine propulsion device with sequentially operating tilt and trim means. 4,498,871, Cl. 440-61.000.

Hall, Harold H., Jr.: *See*—
Bouchard, Andre C.; and Hall, Harold H., Jr., 4,498,883, Cl. 445-28.000.

Hall, Iris H.: *See*—
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Todd, Bradley L., 4,498,427, Cl. 122-379.000.
Walker, Michael L., 4,498,997, Cl. 252-8.55C.

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Halpern, John W. Security arrangements in data transfer equipment. 4,499,556, Cl. 364-900.000.

Halter, Wilbur C. Adjustable pipe clamp holders. 4,498,662, Cl. 269-101.000.

Hamada, Ikuro: *See*—
Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikuro, 4,498,259, Cl. 51-165.710.

Hamajima, Shigemitsu; Nishimura, Tomoaki; Sakakibara, Naoji; and Kawata, Shoji, to Aisin Seiki Kabushiki Kaisha. Automatic transmission control system with reset. 4,499,542, Cl. 364-424.100.

Hamakawa, Yoshihiro; and Tawada, Yoshihisa, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Amorphous semiconductor and amorphous silicon photovoltaic device. 4,499,331, Cl. 136-258.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Labeler with inking mechanism. 4,498,389, Cl. 101-288.000.

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Hanejko, Francis G., to Metal Alloys, Inc. Method of consolidating a metallic or ceramic body. 4,499,049, Cl. 419-49.000.

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Hansen, Franklin A.: *See*—
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Hanson, Robert C.; and Hanson, Leon C., 4,498,863, Cl. 431-89.000.

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Hansson, Lars I. Bone fixation driving instrument. 4,498,468, Cl. 128-92.00B.
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Hanyu, Susumu; and Ebata, Yoshikazu, to Janome Sewing Machine Co., Ltd. Dual-function sewing machine. 4,498,405, Cl. 112-168.000.
Hao, Hideyuki: *See*—
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.
Hara, Kazuo, to Fuji Jukogyo Kabushiki Kaisha. System for detecting ranges in an automatic transmission for vehicles. 4,498,359, Cl. 74-850.000.
Hara, Kunihiko: *See*—
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Hardy, Arthur L. Wingless aircraft with ducted variable pitch airfoils. 4,498,645, Cl. 244-12.600.
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Le Berre, Serge; and Hareng, Michel, 4,499,458, Cl. 340-713.000.
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Harnish, James R., to Borg-Warner Corporation. Quick recovery heat pump water heater. 4,498,622, Cl. 236-25.00R.
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Harris, David; and Hays, Alan, to Black & Decker Inc. Assembling brush box sub-assemblies in electric motors. 4,498,230, Cl. 29-597.000.
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Harris Graphics Corporation: *See*—
Convey, Frank H., Jr., 4,498,381, Cl. 100-100.000.
Wamsley, Richard D.; and Polman, David J., 4,498,663, Cl. 270-54.000.
Harris, Robert S., to Stant Inc. Pressure valve assembly for a fuel tank filler neck cap. 4,498,493, Cl. 137-469.000.
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Hart, James E., to American Standard Inc. Empty/load brake control arrangement. 4,498,712, Cl. 303-23.00R.
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Harvey, Richard. Gasoline vaporizer for internal combustion engine. 4,498,447, Cl. 123-557.000.
Hasebe, Nobuhisa; Kawada, Hiroshi; and Komine, Isamu, to Nippon Kokan Kabushiki Kaisha. Continuous casting mold provided with ultrasonic vibrators. 4,498,518, Cl. 164-416.000.
Hasegawa, Eiichi: *See*—
Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, 4,499,178, Cl. 430-495.000.
Hasegawa, Shumpei; and Yamato, Akihiro, to Honda Motor Co., Ltd. Fuel supply control method having fail-safe function for abnormalities in intake passage pressure detecting means of an internal combustion engine having a turbocharger. 4,498,443, Cl. 123-478.000.
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio feedback control system adapted to obtain stable engine operation under particular engine operating conditions. 4,498,445, Cl. 123-489.000.
Haselkorn, Michael H., to Armco Inc. Insulative coating composition for electrical steels. 4,498,936, Cl. 148-6.15R.
Hashizume, Kenichi, to Tokyo Shibaura Denki Kabushika Kaisha. Self-tracking mechanisms for solar collectors. 4,498,456, Cl. 126-425.000.
Hata, Hideo: *See*—
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,499,241, Cl. 525-211.000.
Hatagawa, Toyotsugu, to Matsushita Electric Industrial Co., Ltd. Microwave heater having a device for thawing frozen cakes. 4,499,356, Cl. 219-10.55E.
Hataya, Fumio: *See*—
Onuma, Tsutomu; and Hataya, Fumio, 4,499,158, Cl. 428-682.000.
Hatton, Gregory J.: *See*—
Helms, David A.; Hatton, Gregory J.; and Williams, Thomas M., 4,499,418, Cl. 324-58.50A.
Hattori, Katsuji: *See*—
Tanaka, Tsutomu; Tsujimoto, Yoshinobu; Serizawa, Hiroyuki; and Hattori, Katsuji, 4,498,730, Cl. 350-96.160.
Hattori, Yoshifumi: *See*—
Takatori, Yasushi; Yano, Yasuhiro; and Hattori, Yoshifumi, 4,499,480, Cl. 346-140.00R.
Hattori, Yoshinori: *See*—
Shimamori, Toru; Hattori, Yoshinori; and Matsuo, Yasushi, 4,499,192, Cl. 501-97.000.
Haulotte, Georges, to Societe des Ateliers de Construction. Supplementary equipment for use with a self-propelled crane with a telescopic jib. 4,498,596, Cl. 212-189.000.
Hauner, Wigbert: *See*—
Meislitzer, Karl H.; and Hauner, Wigbert, 4,498,866, Cl. 432-239.000.
Hauser, Werner: *See*—
Mitrowsky, Alexander; Wissner, Adolf; and Hauser, Werner, 4,499,023, Cl. 260-453.0SP.
Hawkes, J. Barry, Jr., to W. R. Grace & Co. Microwave curing of latex-based compositions. 4,499,036, Cl. 264-26.000.
Hawlitzki, Christian, to Ford Motor Company. Interior light assembly for a vehicle. 4,499,528, Cl. 362-275.000.
Hayashi, Koichi: *See*—
Itoh, Shuji; and Hayashi, Koichi, 4,498,943, Cl. 156-164.000.
Hayashi, Nobuhiro: *See*—
Ohkubo, Masaharu; Hayashi, Nobuhiro; and Aoki, Tomohiro, 4,498,755, Cl. 355-3.0DD.
Hayashi, Nobuyuki: *See*—
Ishimaru, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, 4,499,163, Cl. 430-5.000.
Hays, Alan: *See*—
Harris, David; and Hays, Alan, 4,498,230, Cl. 29-597.000.
Hays-Republic Corporation: *See*—
Hanson, Robert C.; and Hanson, Leon C., 4,498,863, Cl. 431-89.000.
Hazeltine Corporation: *See*—
Cafarella, Thomas; and Enein, Mohamed, 4,499,586, Cl. 375-98.000.
Head Wrightson Machine Company Limited: *See*—
Reed, Geoffrey R., 4,498,276, Cl. 53-588.000.
Heard, Malcolm G. Picture frames. 4,498,255, Cl. 40-156.000.
Heath, Norman W.: *See*—
Grantham, LeRoy F.; and Heath, Norman W., 4,498,347, Cl. 73-861.660.
Hedelin, Lars G. B. Cam apparatus with a rotatable, variable-profile cam means. 4,498,352, Cl. 74-568.00R.
Hegedus, Louis: *See*—
Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,499,206, Cl. 502-304.000.
Heichberger, Albert N. Carbon dioxide liquification system. 4,498,303, Cl. 62-21.000.
Heikes, James E.: *See*—
Sprague, Peter W.; and Heikes, James E., 4,499,292, Cl. 549-459.000.
Heilmeir, Ernst: *See*—
Eckert, Alfred; Heilmeir, Ernst; and Hempen, Klaus, 4,499,537, Cl. 364-200.000.
Heilweil, Israel J., to Mobil Oil Corporation. High temperature stable drilling fluids containing non-aqueous solvents. 4,498,994, Cl. 252-8.50M.
Heinrich Wunder GmbH & Co. KG: *See*—
Zoor, Reinhold, 4,498,685, Cl. 280-605.000.
Heinz, Larry. Universal seal cage lantern ring with channels and fluid slots. 4,498,681, Cl. 277-215.000.
Heinze, Helmut; Wilhelm, Fritz; Mackensen, Klaus; and Finkeldei, Ferdinand, to Davy McKee AG. Process for the continuous production of polybutylene terephthalate of high molecular weight. 4,499,261, Cl. 528-279.000.
Heiser, Carol G.: *See*—
Giacoletto, Lawrence J., 4,499,392, Cl. 310-178.000.
Heller, Robert C.: *See*—
Hill, Lawrence B.; Garbis, Dennis; Heller, Robert C.; and Granata, Amedeo J., 4,499,354, Cl. 219-10.49R.

Helms, David A.; Hatton, Gregory J.; and Williams, Thomas M., to Texaco Inc. Water cut monitoring means and method. 4,499,418, Cl. 324-58.50A.

Heltemes, Eugene C.; and Montean, Samuel, to Minnesota Mining and Manufacturing Company. Desensitizer for ferromagnetic markers used with electromagnetic article surveillance systems. 4,499,444, Cl. 335-284.000.

Hem-Sub, Inc.: *See*—
Carter, William A., 4,498,485, Cl. 131-331.000.

Hempen, Klaus: *See*—
Eckert, Alfred; Heilmeir, Ernst; and Hempen, Klaus, 4,499,537, Cl. 364-200.000.

Henderson, Henry F. Chimney cleaning system. 4,498,208, Cl. 15-163.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Christophliemk, Peter; Novotny, Rudolf; von Laufenberg, Jurgen; and Sadlowsky, Josef, 4,499,062, Cl. 423-332.000.

Henley, Ernest J. Fluidized bed therapy apparatus. 4,498,462, Cl. 128-24.100.

Henley, Virgil E.: *See*—
Brown, Robert L.; Henley, Virgil E.; and Kovalchik, Stephen J., 4,498,948, Cl. 156-401.000.

Henschel Flugzeug-Werke AG: *See*—
Fischer, Willy G.; and Thom, Elmar, 4,498,842, Cl. 416-155.000.

Hentschel, Karl-Heinz; Dhein, Rolf; Winter, Hans; and Vojacek, Herbert, to Bayer Aktiengesellschaft. Power-transmission method uses spirocyclic ketals. 4,499,000, Cl. 252-73.000.

Heraeus Quarzschmelze GmbH: *See*—
Bruning, Rolf; and Roth, Jurgen, 4,499,191, Cl. 436-160.000.

Herchenbach, Horst: *See*—
Rake, Heinrich; Herchenbach, Horst; Jager, Gernot; and Franck, Gerhard, 4,498,930, Cl. 106-100.000.

Hercules Incorporated: *See*—
Valentine, Robert H., 4,499,240, Cl. 525-193.000.

Herd, Randy S.: *See*—
Montana, Donald M.; and Herd, Randy S., 4,499,468, Cl. 343-15.000.

Hergeth, Helmut: *See*—
Hergeth, Hubert; and Hergeth, Helmut, 4,498,215, Cl. 19-81.000.

Hergeth Hollingsworth GmbH: *See*—
Hergeth, Hubert; and Hergeth, Helmut, 4,498,215, Cl. 19-81.000.

Hergeth, Hubert; and Hergeth, Helmut, to Hergeth Hollingsworth GmbH. Apparatus for conveying material as it is removed from rows of bales constituting spinning material. 4,498,215, Cl. 19-81.000.

Herkness, Wayne, II. Earth soil sampler. 4,498,547, Cl. 175-244.000.

Hermann, Hans D.; and Hutten, Ulrich M., to Hoechst Aktiengesellschaft. Finely divided polyvinyl acetals, a process for their preparation, and their use in baked coatings. 4,499,236, Cl. 525-58.000.

Hermann Mellert GmbH & Co. KG: *See*—
Hoche, Gunter, 4,499,389, Cl. 310-41.000.

Hermeling, Gilbert C., Jr.; and Muterspaugh, Max W., to RCA Corporation. Double conversion tuner for broadcast and cable television channels. 4,499,602, Cl. 455-180.000.

Hermolin, Joshua, to Du Pont de Nemours, E. I., and Company. Process for preparation of cyclohexyl hydroperoxide decomposition catalysts. 4,499,305, Cl. 568-342.000.

Herpers, Edmund-Theo: *See*—
Ritter, Horst; and Herpers, Edmund-Theo, 4,499,060, Cl. 423-232.000.

Hershkowitz, Eli: *See*—
Kosower, Edward M.; Pazhenchevsky, Barak; and Hershkowitz, Eli, 4,499,284, Cl. 548-359.000.

Hertel, Richard J., to Varian Associates, Inc. Wafer orientation system. 4,498,833, Cl. 414-217.000.

Herve, Philippe, to Universite Paris X - Paris. Processes for the remote measurement of the emissivity and/or the true temperature of a body with relatively smooth surface. 4,498,765, Cl. 356-43.000.

Hewlett-Packard Company: *See*—
Beebe, Richard P., 4,499,548, Cl. 364-575.000.
Vincent, Kent D., 4,499,382, Cl. 250-493.100.

Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, to Hitachi, Ltd. Absorption cold and warm water system utilizing solar heat. 4,498,307, Cl. 62-148.000.

Hidaka, Yoshiharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Circuit breaker with overvoltage suppression. 4,499,350, Cl. 200-144.0AP.

Hiestand, Wilfred; and Oliver, Everett O. Lumber saw-sizing tool. 4,498,512, Cl. 144-2.00R.

Higgins, David M. Geometrically-integrated architecture of microcircuits for high-speed computers. 4,499,607, Cl. 455-606.000.

Hijikata, Kazuo: *See*—
Banno, Taiichi; Hijikata, Kazuo; and Takekawa, Hiroshi, 4,498,780, Cl. 356-414.000.

Hildreth, Joseph R. Headrest for chair with soft backrest. 4,498,704, Cl. 297-397.000.

Hill, Lawrence B.; Garbis, Dennis; Heller, Robert C.; and Granata, Amedeo J., to General Instrument Corp. Susceptor for radiant absorption heater system. 4,499,354, Cl. 219-10.49R.

Hinnenkamp, James A.: *See*—
Scheben, John A.; and Hinnenkamp, James A., 4,499,298, Cl. 560-241.000.

Hino, Kazuhiko, to Fuji Electric Co., Ltd. Medical bed with sheet retaining means. 4,498,205, Cl. 5-449.000.

Hintze, Richard A., to Evans & Sutherland Computer Corp. Shadow mask color system with calligraphic displays. 4,499,457, Cl. 340-703.000.

Hirabayashi, Hiromi: *See*—
Hosoyama, Kenji; and Hirabayashi, Hiromi, 4,498,313, Cl. 62-514.00R.

Hirabayashi, Yuuji: *See*—
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.

Hiradastechnikai Gepgyar: *See*—
Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.

Hiraga, Masaharu, to Sanden Corporation. Scroll type fluid displacement apparatus with improved end plate fluid passage means. 4,498,852, Cl. 418-55.000.

Hirai, Hiroyuki; and Sato, Kozo, to Fuji Photo Film Co., Ltd. Heat-developable color light-sensitive material with alkyl carboxylic acid base precursor containing triple bond. 4,499,172, Cl. 430-203.000.

Hirai, Hiroyuki; and Kawata, Ken, to Fuji Photo Film Co., Ltd. Heat-developable color photographic materials with base precursor. 4,499,180, Cl. 430-559.000.

Hirano, Satoshi: *See*—
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.

Hirata, Yasushi: *See*—
Ogawa, Masaki; Hirata, Yasushi; and Tsuchikura, Akira, 4,499,228, Cl. 524-413.000.

Hirota, Mitsuhiko: *See*—
Fujioka, Yoshiki; and Hirota, Mitsuhiko, 4,499,414, Cl. 318-803.000.

Hitachi Chemical Company, Ltd.: *See*—
Ishimaru, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, 4,499,163, Cl. 430-5.000.

Hitachi, Ltd.: *See*—
Gemma, Kazutoshi; and Ishibashi, Michiyasu, 4,499,536, Cl. 364-200.000.
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,498,307, Cl. 62-148.000.
Onda, Kenichi; Abe, Kojin; Yabuno, Kohei; and Uemura, Takeshi, 4,499,530, Cl. 363-17.000.
Onuma, Tsutomu; and Hataya, Fumio, 4,499,158, Cl. 428-682.000.
Tabuchi, Kenji; Shida, Masami; and Ishii, Toshio, 4,498,444, Cl. 123-478.000.
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.
Tsubouchi, Kuniyoshi, 4,498,301, Cl. 60-657.000.
Yoshida, Masashi; Katohno, Noboru; Yokota, Hajime; and Okayama, Masao, 4,499,512, Cl. 360-90.000.

Hitco: *See*—
Spain, Raymond G.; and Massie, James E., 4,499,216, Cl. 523-437.000.

Hlubucek, Ladislav: *See*—
Pavek, Miloslav; and Hlubucek, Ladislav, 4,498,280, Cl. 57-22.000.

Hoche, Gunter, to Hermann Mellert GmbH & Co. KG. Self-starting electric motor. 4,499,389, Cl. 310-41.000.

Hoechst Aktiengesellschaft: *See*—
Graetz, Reinhard, 4,498,282, Cl. 57-218.000.
Hermann, Hans D.; and Hutten, Ulrich M., 4,499,236, Cl. 525-58.000.
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Jurgen, 4,499,211, Cl. 521-145.000.

Hoek, Arend; Post, Martin F. M.; Minderhoud, Johannes K.; and Lednor, Peter W., to Shell Oil Company. Process for the preparation of a Fischer-Tropsch catalyst and preparation of hydrocarbons from syngas. 4,499,209, Cl. 518-707.000.

Hoelscher, James R.: *See*—
Smith, Barry L.; Hoelscher, James R.; and Petit, William A., 4,498,650, Cl. 246-122.00R.

Hoff, Raymond E.: *See*—
Pullukat, Thomas J.; Hoff, Raymond E.; and Lynch, Michael W., 4,499,198, Cl. 502-104.000.

Hofmann, Hans P.: *See*—
Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, 4,499,087, Cl. 514-211.000.

Hoge, Warren, Zimmerman Company: *See*—
Mason, Walter R.; and Cummings, Jimmie L., 4,499,561, Cl. 366-156.000.

Hohenegger, Karl: *See*—
Thoni, Werner; Huber, Peter; and Hohenegger, Karl, 4,498,728, Cl. 350-1.700.

Hokuriku Electric Industry Co., Ltd.: *See*—
Tanino, Katsumi; Fujiki, Satoshi; and Okamoto, Shinzi, 4,499,010, Cl. 252-512.000.

Holac Maschinenbau GmbH: *See*—
Maus, Helmut, 4,498,380, Cl. 100-98.00R.

Holiday, Paul R., deceased; by Holiday, Suzanne N., executrix; and Kear, Bernard H., to United Technologies Corporation. Article made from sheet having a controlled crystallographic orientation. 4,499,155, Cl. 428-586.000.

Holiday, Suzanne N., executrix: *See*—
Holiday, Paul R., deceased; Holiday, Suzanne N., executrix; and Kear, Bernard H., 4,499,155, Cl. 428-586.000.

Holl, Herbert B., to United States of America, Army. Angle of arrival meter. 4,498,768, Cl. 356-141.000.

Holman, Rury R.: *See*—
Turner, Robert C.; Stone, Anthony B.; and Holman, Rury R., 4,498,904, Cl. 604-211.000.
Holmberg, Scott H.; and Flasck, Richard A., to Energy Conversion Devices, Inc. Programmable cell for use in programmable electronic arrays. 4,499,557, Cl. 365-163.000.
Holmwood, Graham; and Regel, Erik, to Bayer Aktiengeselischaft. Substituted triazolylmethyl-oxiranes and their use as intermediates for fungicides. 4,499,281, Cl. 548-262.000.
Holscher & Leuschner GmbH & Co.: *See*—
Leuschner, Peter, 4,498,424, Cl. 119-51.00R.
Holtzhauser, Joseph C.; and Kwasniewski, Dale L., to Eaton Corporation. Onboard tire inflation system. 4,498,515, Cl. 152-417.000.
Holzer, Gerold: *See*—
Barrus, Gordon B.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holzer, Gerold, 4,498,793, Cl. 400-320.000.
Home of Champions, S.A.: *See*—
Tomar, Julius, 4,498,667, Cl. 273-60.00B.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ban, Keisuke; and Daimaru, Akimasa, 4,498,219, Cl. 29-156.50R.
Fujii, Takayuki; and Tanaka, Norio, 4,498,700, Cl. 296-78.100.
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, 4,498,445, Cl. 123-489.000.
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,498,553, Cl. 180-230.000.
Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, 4,498,440, Cl. 123-438.000.
Honda Motor Co., Ltd.: *See*—
Hasegawa, Shumpei; and Yamato, Akihiro, 4,498,443, Cl. 123-478.000.
Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, to Krupp Corpoplast Maschinenplast GmbH. Method for making a parison for blowmolding of a hollow article. 4,499,044, Cl. 264-521.000.
Honeywell Inc.: *See*—
Aske, Vernon H., 4,498,342, Cl. 73-517.00B.
Huston, Dennis L.; Kardashian, Vahram S.; and Mones, Arthur H., 4,498,954, Cl. 156-651.000.
Maas, Michael F., 4,499,425, Cl. 329-50.000.
Wellinghoff, Stephen T.; Jenekhe, Samson A.; and Kedrowski, Thomas J., 4,499,008, Cl. 252-500.000.
Honeywell Information Systems Inc.: *See*—
Still, David W.; and Economopoulos, Peter C., 4,499,579, Cl. 371-15.000.
Honsberg, Wolfgang, to Du Pont de Nemours, E. I., and Company. Process for curing a chlorinated polyolefin in the presence of aliphatic polyhydroxy alcohol. 4,499,244, Cl. 525-384.000.
Hoover Company, The: *See*—
Oxel, Berton R., 4,498,214, Cl. 15-320.000.
Hoover, Richard B. Folded optical large format photomicrographic camera system. 4,498,749, Cl. 354-79.000.
Horiba, Ltd.: *See*—
Miyatake, Kimio; Isiida, Kozo; Ebi, Hiroyuki; and Shimada, Takeshi, 4,499,378, Cl. 250-343.000.
Miyatake, Kimio; and Tomita, Katsuhiko, 4,499,379, Cl. 250-343.000.
Horiuchi, Tomofusa, to Nissan Motor Company, Limited. Auxiliary air supplying apparatus for an internal combustion engine. 4,498,436, Cl. 123-339.000.
Horiuchi, Toshiaki: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.
Horne, June B. Emergency escape apparatus and method of using same. 4,498,557, Cl. 182-49.000.
Hortin, Kenneth L.: *See*—
Fellwock, Louis W.; Hortin, Kenneth L.; and Fellwock, Charles G., 4,498,713, Cl. 312-214.000.
Horwege, Claus: *See*—
Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, 4,499,044, Cl. 264-521.000.
Hosaka, Yoshihiro; Kamoshida, Yoichi; Harita, Yoshiyuki; and Harada, Kunihiro, to Japan Synthetic Rubber Co., Ltd. Positive type photosensitive resin composition with at least two o-quinone diazides. 4,499,171, Cl. 430-192.000.
Hoshino, Kiyotaka: *See*—
Watanabe, Yasushi; Suzuki, Yuichi; Nagata, Yukihiro; and Hoshino, Kiyotaka, 4,498,519, Cl. 164-417.000.
Hosokawa, Toshihiro: *See*—
Okumura, Yoshiharu; Kamiyama, Setsuo; Hosokawa, Toshihiro; and Kaneko, Katsumi, 4,499,313, Cl. 568-897.000.
Hosoya, Masahiro; and Ueno, Tsuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Developing device. 4,498,756, Cl. 355-3.0DD.
Hosoya, Toshiro, to U.S. Industrial Products Co. Gas detecting and monitoring device. 4,498,330, Cl. 73-23.000.
Hosoyama, Kenji; and Hirabayashi, Hiromi, to National Laboratory for High Energy Physics. Compact helium gas-refrigerating and liquefying apparatus. 4,498,313, Cl. 62-514.00R.
Hospal-Sodip, S.A.: *See*—
Pusineri, Christian; and Goletto, Jean, 4,499,124, Cl. 427-385.500.
Howarth, Robert F., to United States of America, Navy. Data validation monitor. 4,499,584, Cl. 375-58.000.
Howell, Paul J.; and Currier, Gregory B., to Fairchild Camera & Instrument Corporation. Wafer fabrication by implanting through protective layer. 4,498,227, Cl. 29-576.00B.
Hreschak, Bohdan O.; and Hreschak, Christine. Apparatus for the control of larvae of the Gypsy Moth and other hardwood defoliators. 4,498,587, Cl. 206-525.000.
Hreschak, Christine: *See*—
Hreschak, Bohdan O.; and Hreschak, Christine, 4,498,587, Cl. 206-525.000.
Hruby, Andrew J.: *See*—
Knox, Bruce R.; and Hruby, Andrew J., 4,499,464, Cl. 340-825.720.
Huang, Alan, to AT&T Bell Laboratories. Sorting technique. 4,499,555, Cl. 364-900.000.
Huang, Francis Y.: *See*—
Raba, Carl F., Jr.; Smith, Robert L.; and Huang, Francis Y., 4,498,993, Cl. 210-710.000.
Huard, Jean-Francois: *See*—
Benicourt, Michel; Buffet, Jean; and Huard, Jean-Francois, 4,499,329, Cl. 136-208.000.
Huber, Bernd: *See*—
Kalchschmied, Dietmar; Bonenberger, Hartmut; and Huber, Bernd, 4,498,696, Cl. 293-126.000.
Huber, Peter: *See*—
Thoni, Werner; Huber, Peter; and Hohenegger, Karl, 4,498,728, Cl. 350-1.700.
Hudson, Robert C.; MacPherson, William F.; and Sharpless, Charles H., to AT&T Bell Laboratories. Floating battery feed circuit. 4,499,532, Cl. 363-21.000.
Hue, Jean: *See*—
Salomon, Georges P. J.; and Hue, Jean, 4,498,687, Cl. 280-615.000.
Huffman, Lowell E. Closely coiled packing element, method of manufacture, and process for purifying gases. 4,499,033, Cl. 261-94.000.
Huggins, William H.: *See*—
Chalmers, Edward; and Huggins, William H., 4,498,474, Cl. 128-303.130.
Hughes Aircraft Company: *See*—
Alves, James F., 4,499,597, Cl. 382-41.000.
Doty, John S, 4,498,260, Cl. 51-217.00R.
Mulliner, Richard R.; and Ajioka, James S., 4,499,157, Cl. 428-624.000.
Hughes, Charles C.: *See*—
Aultz, Thomas R.; Hughes, Charles C.; and Humbert, Stanley F., 4,498,567, Cl. 192-133.000.
Humbert, Stanley F.: *See*—
Aultz, Thomas R.; Hughes, Charles C.; and Humbert, Stanley F., 4,498,567, Cl. 192-133.000.
Huntley, Peter, to Borg-Warner Corporation. Power transmission belt. 4,498,892, Cl. 474-242.000.
Husler, Rinaldo; Rutsch, Werner; and Dietliker, Kurt, to Ciba-Geigy Corporation. Process for the photopolymerization of unsaturated compounds. 4,498,964, Cl. 204-159.230.
Hussmann Store Equipment Limited: *See*—
Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, 4,498,308, Cl. 62-184.000.
Huston, Dennis L.; Kardashian, Vahram S.; and Mones, Arthur H., to Honeywell Inc. Selective process for etching chromium. 4,498,954, Cl. 156-651.000.
Hutchin, Richard A., to Novon, Inc. Method and apparatus for three frame range imaging. 4,499,492, Cl. 358-107.000.
Hutchison, David A., to Atlantic Richfield Company. Stabilization of hydrocracked oils against UV-light degradation with certain dihydroxy components. 4,498,998, Cl. 252-52.00R.
Hutten, Ulrich M.: *See*—
Hermann, Hans D.; and Hutten, Ulrich M., 4,499,236, Cl. 525-58.000.
Hyatt, John A.; and Coates, Clarence A., Jr., to Eastman Kodak Company. NH_4^+ Or group IA metal 2,7-dimethyl-1,2,3-tetrahydro-β-hydroxy-1-quinolinepropanesulfonates. 4,499,272, Cl. 546-172.000.
Hylsa, S.A.: *See*—
Martinez-Vera, Enrique; Guerra-Garcia, Gilberto; and Tovalin, Jose L. L., 4,498,498, Cl. 137-613.000.
Hysan Corporation: *See*—
Berkeley, Bernard, 4,498,933, Cl. 134-22.140.
Iacoponi, Stefano; and Di Nunzio, Vittorio, to Fiat Auto Spa. Device for automatically adjusting the frequency of activation of a motor vehicle windscreen wiper. 4,499,410, Cl. 318-444.000.
Iannarelli, Luigi: *See*—
Grassi, Fabrizio; and Iannarelli, Luigi, 4,498,545, Cl. 173-43.000.
IAT: *See*—
Izosimov, Dimitrij B.; and Sabanovic, Asif, 4,499,413, Cl. 318-802.000.
Ibbotson, Dale E.: *See*—
Cook, Joel M.; Donnelly, Vincent M.; Flamm, Daniel L.; Ibbotson, Dale E.; and Mucha, John A., 4,498,953, Cl. 156-646.000.
Ibiden Co., Ltd.: *See*—
Enomoto, Ryo; Yamauchi, Hidetoshi; and Tanikawa, Shoji, 4,499,147, Cl. 428-428.000.
Ichihashi, Hiroo: *See*—
Matsufuji, Yohji; Togano, Shigeo; and Ichihashi, Hiroo, 4,499,478, Cl. 346-140.00R.
Ichimura, Yoshiaki, to Japan Aviation Electronics Industry Limited. Flat pack with housing deformation prevention means. 4,498,720, Cl. 339-75.0MP.
ICI Americas Inc.: *See*—
Bernstein, Peter R.; and Willard, Alvin K., 4,499,299, Cl. 514-570.000.
Robertson, John R., 4,498,929, Cl. 106-38.200.
Icoma Packtechnik GmbH: *See*—
Kuckhermann, Gustav, 4,498,894, Cl. 493-234.000.

Igarashi, Kazumasa; Yamaguchi, Katsuhiko; and Tanaka, Munekazu, to Nitto Electric Industrial Co., Ltd. Process for producing polyimide precursor. 4,499,252, Cl. 528-38.000.

Ihara, Kiyohiko: *See—*
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.

Iijima, Makoto: *See—*
Harada, Masato; Iijima, Makoto; and Saitoh, Noriaki, 4,499,194, Cl. 502-8.000.

Iinuma, Kazumoto, to Nippon Electric Co., Ltd. Run length decoding apparatus. 4,499,498, Cl. 358-261.000.

IIT Research Institute: *See—*
Bridges, Jack E., 4,498,535, Cl. 166-248.000.

Ikeguchi, Nobuyuki; and Kimbara, Hidenori, to Mitsubishi Gas Chemical Company, Inc. Curable resin composition. 4,499,245, Cl. 525-417.000.

Ilardi, Joseph M.; and Goldstein, David, to Intermountain Research & Development Corp. Solution mining of trona or nahcolite ore with aqueous NaOH and HCl solvents. 4,498,706, Cl. 299-5.000.

Ilukowicz, Robert J., to Preco Industries Limited. Support for positioning reinforcing rods or mesh in concrete or the like. 4,498,270, Cl. 52-685.000.

Imai, Yasuhiro: *See—*
Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, 4,498,440, Cl. 123-438.000.

Imaki, Naoshi; and Nakanome, Takemi, to Mitsubishi Chemical Industries Ltd. 2,2-Dihalo-6-halo-6-(1-haloisobutyl)cyclohexanone. 4,499,306, Cl. 568-348.000.

Imanishi, Masami; and Tanaka, Naoki, to Mitsubishi Denki Kabushiki Kaisha. Heat pump system. 4,498,310, Cl. 62-211.000.

Imhof, Werner: *See—*
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Imori, Hideo: *See—*
Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, 4,499,390, Cl. 310-88.000.

Imperial Chemical Industries PLC: *See—*
Blundell, David J.; Griffin, Brian P.; and MacDonald, William A., 4,499,256, Cl. 528-172.000.
Seddon, Duncan; Mole, Thomas; and Whiteside, Judy A., 4,499,314, Cl. 585-408.000.

Inaba, Morimitsu, to Inabac Corporation; and AMT Co., Ltd. Magnetic separator. 4,498,987, Cl. 210-222.000.

Inabac Corporation: *See—*
Inaba, Morimitsu, 4,498,987, Cl. 210-222.000.

Inagaki, Kouichi: *See—*
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Falconieri, Remo, 4,498,792, Cl. 400-214.000.

Ingeniorfirmaet Lytzen KS: *See—*
Vestergaard, Alex D., 4,498,678, Cl. 277-3.000.

Inman, Calvin R. Undersea platform construction. 4,498,268, Cl. 52-593.000.

Inmont Corporation: *See—*
Panush, Sol, 4,499,143, Cl. 428-336.000.

Innovative Concepts, Inc.: *See—*
Long, Jerry M.; and Womack, James A., 4,498,583, Cl. 206-444.000.

Inoue, Shunji: *See—*
Suzuki, Norimoto; and Inoue, Shunji, 4,499,126, Cl. 428-13.000.

Inoue, Tomoyasu; and Shibata, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing three-dimensional semiconductor device by sequential beam epitaxy. 4,498,226, Cl. 29-576.00B.

INRYCO, Inc.: *See—*
Shea, Yale R.; and Zuege, Kevin C., 4,499,332, Cl. 174-48.000.

Institut Francais du Petrole: *See—*
Billon, Alain; Le Page, Jean-Francois; and Peries, Jean-Pierre, 4,498,974, Cl. 208-96.000.
Juguin, Bernard; Martino, Germain; and Miquel, Jean, 4,498,907, Cl. 44-56.000.
Ramet, Claude; and Rojey, Alexandre, 4,498,999, Cl. 252-67.000.
Toulhoat, Herve ; Plumail, Jean-Claude; Billon, Alain; and Quignard, Alain, 4,498,972, Cl. 208-59.000.

Institut Pasteur: *See—*
Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, 4,499,080, Cl. 514-12.000.

Instrument S.A.: *See—*
Bouchaib, Pierre, 4,498,416, Cl. 118-719.000.

Instrumentation Laboratory Inc.: *See—*
Jones, Ronald L., 4,499,053, Cl. 422-68.000.

Intel Corporation: *See—*
Bazes, Mel, 4,499,428, Cl. 330-10.000.

Intengan, Franklin S., to Faro, John H. Manupedal bicycle. 4,498,684, Cl. 280-234.000.

Interferon Sciences, Inc.: *See—*
Estis, Leonard F., 4,499,014, Cl. 260-112.00R.

Intermountain Research & Development Corp.: *See—*
Ilardi, Joseph M.; and Goldstein, David, 4,498,706, Cl. 299-5.000.

International Business Machines Corporation: *See—*
Brickman, Norman F.; and Rosenbaum, Walter S., 4,499,499, Cl. 358-263.000.
Broockman, Eric C.; Cato, Robert T.; and Lynch, Robert C., 4,499,608, Cl. 455-607.000.
Casey, Richard G.; and Friedman, Theodore D., 4,499,596, Cl. 382-37.000.
Chee-Shuen Lee, Francis; Mills, Ross N.; and Talke, Frank E., 4,499,479, Cl. 346-140.00R.
Economy, James; and Zachariades, Anagnostis E., 4,499,122, Cl. 427-130.000.
Gillet, John B.; and Miraglia, John A., 4,499,523, Cl. 361-383.000.
Kanazawa, Kay K., 4,499,552, Cl. 364-802.000.
Lipschutz, Lewis D., 4,498,530, Cl. 165-185.000.
Makosch, Gunter; and Schedewie, Franz, 4,498,771, Cl. 356-351.000.
Pearson, Kenneth A.; and Zucker, Larry R., 4,499,460, Cl. 340-771.000.
Vosacek, Robert H., 4,499,539, Cl. 364-200.000.

International Flavors & Fragrances Inc.: *See—*
Klemarczyk, Philip T., 4,498,996, Cl. 252-8.600.
Luccarelli, Domenick, Jr.; Mookherjee, Braja D.; Wilson, Richard A.; Zampino, Michael J.; and Bowen, David R., 4,499,114, Cl. 426-534.000.
Pittet, Alan O.; Muralidhara, Ranya; and Hagedorn, Myrna L., 4,499,307, Cl. 568-355.000.

International Harvester Company: *See—*
Vater, George R.; and Melles, Harold W., 4,498,356, Cl. 74-745.000.

International Paper Company: *See—*
Gordon, Robert L.; Alba, Andrew J.; Bodary, Michael; and Mesquida-Feirman, Barbara, 4,498,585, Cl. 206-518.000.

International Solarpanel, Inc.: *See—*
Leflar, James A.; and Wardlow, William C., 4,498,265, Cl. 52-403.000.

International Standard Electric Corporation: *See—*
Powell, William H.; and Witters, Hugo F. J., 4,499,600, Cl. 455-9.000.

International Telephone and Telegraph Corporation: *See—*
Muska, Willis M., 4,499,609, Cl. 455-619.000.

Intevep, S.A.: *See—*
Arias, Beatriz; Kum, Humberto; and Galiasso, Roberto, 4,499,202, Cl. 502-211.000.

Intorp, Norbert B.: *See—*
Kent, Gary D.; Intorp, Norbert B.; and Springstead, Thomas H., 4,498,935, Cl. 148-6.15Z.

Inui, Toshiharu; Kurata, Masami; Nakajima, Hisao; and Ohmori, Takashi, to Fuji Xerox Co., Inc. Transfer type heat sensitive recording apparatus. 4,499,476, Cl. 346-76.0PH.

Inuiya, Masafumi; and Murakoshi, Makoto, to Fuji Photo Optical Co., Ltd. Output compensating system. 4,499,547, Cl. 364-571.000.

Iowa State University Research Foundation, Inc.: *See—*
Yeung, Edward E.; Steenhoek, Larry E.; Woodruff, Steven D.; and Kuo, Jeng-Chung, 4,498,774, Cl. 356-368.000.

Ipco Corporation: *See—*
Schneiderman, Max, 4,498,475, Cl. 128-303.140.

Irino, Hiroshi: *See—*
Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, 4,498,440, Cl. 123-438.000.

Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Optically anisotropic melt forming copolyesters. 4,499,259, Cl. 528-190.000.

Isailovic, Jordan: *See—*
Dakin, Wayne R.; and Isailovic, Jordan, 4,499,502, Cl. 358-310.000.

Iseki & Co., Ltd.: *See—*
Nishihara, Tadao, 4,498,349, Cl. 74-5.200.

Ishibashi, Michiyasu: *See—*
Gemma, Kazutoshi; and Ishibashi, Michiyasu, 4,499,536, Cl. 364-200.000.

Ishida, Kozo: *See—*
Miyatake, Kimio; Ishida, Kozo; Ebi, Hiroyuki; and Shimada, Takeshi, 4,499,378, Cl. 250-343.000.

Ishiguro, Mamoru: *See—*
Gohda, Seiichi; and Ishiguro, Mamoru, 4,499,509, Cl. 360-72.100.

Ishii, Akihiko: *See—*
Kubo, Akira; Ishii, Akihiko; Nishizaki, Ken; and Saito, Tomoharu, 4,499,225, Cl. 524-276.000.

Ishii, Norio: *See—*
Sato, Hiroshi; Ishii, Norio; and Nakamura, Shyuzo, 4,499,321, Cl. 585-486.000.

Ishii, Shigeru: *See—*
Ozawa, Kiyomi; and Ishii, Shigeru, 4,499,275, Cl. 546-298.000.

Ishii, Toshio: *See—*
Tabuchi, Kenji; Shida, Masami; and Ishii, Toshio, 4,498,444, Cl. 123-478.000.

Ishikawa, Noboru: *See—*
Murakami, Yoichi; Shoji, Akio; Takezawa, Shoichiro; Ishikawa, Noboru; and Morita, Toshiaki, 4,499,239, Cl. 525-111.000.

Ishimaru, Kenji: *See—*
Fujita, Kiyoshi; Toyohisa, Shirou; Katou, Osamu; and Ishimaru, Kenji, 4,498,988, Cl. 210-397.000.

Ishimaru, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, to Hitachi Chemical Company, Ltd. Soldering mask formed from a photosensitive resin composition and a photosensitive element. 4,499,163, Cl. 430-5.000.

Ishimura, Yoshio. Spindle tilting control device for a plane and spherical rotary grinding machine, fine grinding machine, lapping machine and polishing machine. 4,498,258, Cl. 51-131.300.

Ishino, Tokio: *See—*
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, 4,498,754, Cl. 354-479.000.

Ishiwata, Tatsumi: *See*—
Segawa, Hideo; Mori, Koji; Itagaki, Masanori; Sakurai, Kohichi; and Ishiwata, Tatsumi, 4,499,384, Cl. 250-578.000.

Ishiyama, Shozo, to Konishiroku Photo Industry Co., Ltd. Compact, wide magnification-variable zoom lens system. 4,498,741, Cl. 350-427.000.

Ishizuka, Takashi; Moriyama, Yasuhiro; and Nakamura, Masao, to Nitto Electric Industrial Co., Ltd. Production of heat-shrinkable polyimide films. 4,499,042, Cl. 264-205.000.

Iso, Tadashi: *See*—
Oya, Masayuki; and Iso, Tadashi, 4,499,102, Cl. 514-365.000.

Isobe, Asao: *See*—
Ishimaru, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, 4,499,163, Cl. 430-5.000.

Isozumi, Shoji; and Kusunoki, Toshihiro, to Fujitsu Limited. Liquid phase epitaxial growth method. 4,498,937, Cl. 148-171.000.

Itagaki, Masanori: *See*—
Segawa, Hideo; Mori, Koji; Itagaki, Masanori; Sakurai, Kohichi; and Ishiwata, Tatsumi, 4,499,384, Cl. 250-578.000.

Itakura, Shinji: *See*—
Onda, Tsutomu; Kano, Keiichi; and Itakura, Shinji, 4,498,965, Cl. 204-228.000.

Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, to Seiko Instruments & Electronics Ltd. Electrochromic display devices using iron(III) hexacyanoferrate(II) salt. 4,498,739, Cl. 350-357.000.

Itaya, Masahiko: *See*—
Haneda, Satoshi; Itaya, Masahiko; and Tomono, Makoto, 4,499,169, Cl. 430-102.000.

Ito, Kenzo: *See*—
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.

Ito, Nobuei: *See*—
Yoshida, Hitoshi; Atsumi, Morihiro; Ito, Nobuei; and Atsumi, Kinya, 4,499,366, Cl. 219-270.000.

Itoh, Shuji; and Hayashi, Koichi, to Kyokuto Fatty-Acid Corporation. Apparatus for producing composite corrugating media for the manufacture of corrugated fiberboard and method of making same. 4,498,943, Cl. 156-164.000.

Itoh, Tadatsugu, to Minicam Research Corporation. Battery rapid charging circuit. 4,499,415, Cl. 320-5.000.

Itoh, Teruyoshi: *See*—
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, 4,498,331, Cl. 73-35.000.

Itoh, Yoshimasa: *See*—
Kiba, Hiroshi; Itoh, Yoshimasa; and Kiryu, Kiyuji, 4,498,414, Cl. 118-663.000.

ITT Industries, Inc.: *See*—
Adam, Fritz G., 4,499,388, Cl. 307-474.000.
Thysen, Albert A. P.; and Timmermans, Gilbert L. J., 4,498,317, Cl. 68-12.00R.

Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Waterproof structure for slip rings of an a.c. generator for a car. 4,499,390, Cl. 310-88.000.

Iwamoto, Shohzoh: *See*—
Tanaka, Nobuyasu; Ohashi, Mitunari; and Iwamoto, Shohzoh, 4,498,569, Cl. 193-27.000.

Iwasa, Koji: *See*—
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,498,739, Cl. 350-357.000.

Iwata, Mamoru: *See*—
Tsuchiya, Toshiharu; and Iwata, Mamoru, 4,498,415, Cl. 118-712.000.

Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, to Nippon Steel Chemical Co., Ltd.; and Sumitomo Chemical Company, Limited. Thermoplastic resin products having pearl-like luster. 4,499,238, Cl. 525-98.000.

Iwata, Toshiharu: *See*—
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, 4,498,331, Cl. 73-35.000.

Izosimov, Dimitrij B.; and Sabanovic, Asif, to Energoinvest; and IAT. Method and apparatus for the control of synchronous motors. 4,499,413, Cl. 318-802.000.

Izume, Takatomo; and Okado, Chihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. DC Power source. 4,499,363, Cl. 219-130.210.

Izumi Denki Corporation: *See*—
Fujita, Teizo; and Kimura, Haruo, 4,499,352, Cl. 200-296.000.

J. C. Renfroe and Sons, Inc.: *See*—
Davies, William, 4,498,699, Cl. 294-101.000.

J. M. Huber Corporation: *See*—
White, Herbert V., 4,498,895, Cl. 493-476.000.

J. Mulcahy Enterprises Incorporated: *See*—
Mulcahy, Joseph A., 4,499,583, Cl. 373-161.000.

J. T. Baker Chemical Company: *See*—
Ward, Irl E.; and Papoojian, Philip M., 4,499,231, Cl. 524-506.000.

Jacobsen, Orval E. Heat exchanger with by-pass. 4,498,524, Cl. 165-36.000.

Jacobson, Chester F., to Gillette Company, The. Razor blade assembly. 4,498,235, Cl. 30-47.000.

Jacotra A. G.: *See*—
van Rijswijk, Jacob, 4,499,144, Cl. 428-376.000.

Jacquel, Dominique, to Somfy. Apparatus for controlling electrical receivers occupying at least two states. 4,499,463, Cl. 340-825.520.

Jacquet, Maurice, to Valeo. Means for holding a flap which is rotatably mounted in a conduit, and housing containing said means, for a vehicle air conditioning installation. 4,498,528, Cl. 165-42.000.

Jacquin, Yves: *See*—
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,499,203, Cl. 502-247.000.

Jacubert, Serge: *See*—
Grosbois, Jean; Jacubert, Serge; and Verdier, Jean-Michel, 4,499,063, Cl. 423-347.000.

Jager, Gernot: *See*—
Rake, Heinrich; Herchenbach, Horst; Jager, Gernot; and Franck, Gerhard, 4,498,930, Cl. 106-100.000.

Jalics, George, to Goodyear Tire & Rubber Company, The. Poly-diisopropenyl benzene synthesis. 4,499,248, Cl. 526-173.000.

James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., to Podell, Howard L. Dipped rubber article. 4,499,154, Cl. 428-494.000.

James River-Norwalk, Inc.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

James, William G., to General Electric Company. Color corrective coating for arc lamp. 4,499,397, Cl. 313-112.000.

Janda, Bruce W.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

Janome Sewing Machine Co., Ltd.: *See*—
Hanyu, Susumu; and Ebata, Yoshikazu, 4,498,405, Cl. 112-168.000.

Janssen, Alexander P. Visible indexes. 4,499,132, Cl. 428-77.000.

Japan Aviation Electronics Industry Limited: *See*—
Ichimura, Yoshiaki, 4,498,720, Cl. 339-75.0MP.

Japan Servo Co., Ltd.: *See*—
Sakamoto, Masafumi, 4,499,391, Cl. 310-89.000.

Japan Synthetic Rubber Co., Ltd.: *See*—
Hosaka, Yoshihiro; Kamoshida, Yoichi; Harita, Yoshiyuki; and Harada, Kunihiro, 4,499,171, Cl. 430-192.000.

Jargell, Tomas: *See*—
Bernhardsson, Goran; and Jargell, Tomas, 4,498,784, Cl. 366-134.000.

Jarry, Christian: *See*—
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,499,090, Cl. 514-210.000.

Jaschinski, John J., to Manitowoc Company, Inc., The. Adjustable rate ice cube dispenser. 4,498,607, Cl. 222-146.600.

Jasinski, Raymond J.: *See*—
Davison, John B.; Jasinski, Raymond J.; and Peerce-Landers, Pamela J., 4,499,025, Cl. 260-465.00R.

Jastrzebski, Lubomir L.; and Lagowski, Jacek, to RCA Corporation. Method to determine the crystalline properties of an interface of two materials by an optical technique. 4,498,772, Cl. 356-357.000.

Jaszczak, Ronald J. Nuclear imaging phantom. 4,499,375, Cl. 250-252.100.

Jeffery, Graham J., to Rolls-Royce Limited. Turbine overspeed limiter for turbomachines. 4,498,291, Cl. 60-39.091.

Jekel: Harold L. Fishing rod butt. 4,498,257, Cl. 43-23.000.

Jelling, Murray: *See*—
Stockel, Richard F.; and Jelling, Murray, 4,499,077, Cl. 424-149.000.

Jenekhe, Samson A.: *See*—
Wellinghoff, Stephen T.; Jenekhe, Samson A.; and Kedrowski, Thomas J., 4,499,008, Cl. 252-500.000.

Jensen, Bruce A., to Phillips Petroleum Company. Control of a fractional distillation process. 4,498,916, Cl. 62-21.000.

Jensen, Poul F.: *See*—
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Jillie, Don W., Jr.; and Smith, Lawrence N., to Sperry Corporation. Method of manufacturing Josephson junction integrated circuits. 4,498,228, Cl. 29-577.00C.

Jinnai, Koichiro, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,499,475, Cl. 346-75.000.

Jinno, Katsushi: *See*—
Maemoto, Kenichi; and Jinno, Katsushi, 4,499,040, Cl. 264-167.000.

Jobin, Georges F.: *See*—
de Palezieux, Jacques; and Jobin, Georges F., 4,498,529, Cl. 165-176.000.

Johann, James R. Steerable carriage for a sailboat. 4,498,683, Cl. 280-16.000.

Johannes Menschner Maschinenfabrik GMBH & Co. KG: *See*—
Van Dijk, Alfonsius A. J., 4,498,240, Cl. 33-147.00L.

Johannson, Richard J., to Towmotor Corporation. Retention device for a load engaging member. 4,498,838, Cl. 414-664.000.

Johnson, Elizabeth A., to Erpelding, Edward J. Golf tee holder. 4,498,615, Cl. 224-274.000.

Johnson, James R. Method and apparatus for making zipper bags. 4,498,939, Cl. 156-66.000.

Johnson & Johnson Products, Inc.: *See*—
Silbering, Steven B.; and Sipos, Tibor, 4,499,067, Cl. 424-52.000.
Silbering, Steven B.; and Sipos, Tibor, 4,499,068, Cl. 424-52.000.

Johnson, Peter D.: *See*—
Anderson, John M.; and Johnson, Peter D., 4,499,400, Cl. 313-265.000.

Johnson, Robert R., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,498,488, Cl. 131-336.000.

Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., to Upjohn Company, The. PGI_2 Salts. 4,499,293, Cl. 549-465.000.

Johnston, James J., to Brand-Rex Company. Electrical connector and method for terminating solid conductors. 4,498,723, Cl. 339-97.00P.

Johnston, James S., to Rosemount Engineering Company Limited. Differential pressure sensing apparatus. 4,499,373, Cl. 250-231.00P.

Johnston, Russell A., to Camco, Incorporated. Keyhole mandrel with insert pocket. 4,498,533, Cl. 166-117.500.

Jones, C. Andrew; and Sofranko, John A., to Atlantic Richfield Company. Methane conversion. 4,499,322, Cl. 585-500.000.

Jones, Peter W. J.; Plummer, William T.; and Purcell, Dennis W., to Polaroid Corporation. Camera for photographing scale models. 4,498,748, Cl. 354-79.000.

Jones, Ronald L., to Instrumentation Laboratory Inc. Fluid sampling. 4,499,053, Cl. 422-68.000.

Jones, Ruth M.: *See*—
Calenoff, Emanuel; Jones, Ruth M.; Tsay, Yuh-Geng; and Beigler, Myron A., 4,499,065, Cl. 424-9.000.

Jones, Thomas M.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.

Jones, Timothy A.; and Snavely, Earl S., Jr., to Mobil Oil Corporation. In-line injection of alkaline absorbant to remove H_2S. 4,499,059, Cl. 423-226.000.

Jones, William A. Picture-backing foil with depressions and coloring materials therein. 4,499,127, Cl. 428-14.000.

Jones, William P. Board game with quoits movement indicator. 4,498,675, Cl. 273-249.000.

Joseph, Christian: *See*—
Tesson, Gerard; and Joseph, Christian, 4,499,246, Cl. 525-486.000.

Joshi, Madhusudan: *See*—
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,498,476, Cl. 128-346.000.

Jostad, Ray E.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

Jourdan, Donovan K.: *See*—
Baltz, Gene F.; Clark, Amos M.; Hartke, David J.; and Jourdan, Donovan K., 4,498,434, Cl. 123-187.50R.

Joyce, Christopher: *See*—
White, Cyril J.; and Joyce, Christopher, 4,498,724, Cl. 339-97.00R.

Jozepaitis, Charles M.: *See*—
Bissell, Douglas E.; and Jozepaitis, Charles M., 4,498,844, Cl. 417-68.000.

Judson, Daniel G. Diesel fuel heater. 4,498,446, Cl. 123-557.000.

Juguin, Bernard; Martino, Germain; and Miquel, Jean, to Institut Francais du Petrole. Process for upgrading cuts of very high cycloparaffins content. 4,498,907, Cl. 44-56.000.

Jung-Sun, Lin. Reminder. 4,498,787, Cl. 368-10.000.

Jurgens, Rainer, to Norton Christensen, Inc. Cutting member for rotary drill bit. 4,498,549, Cl. 175-329.000.

Jurgens, Rainer, to Christensen, Inc. Apparatus for transmitting data from a borehole to the surface of the earth during the operation of a drilling device. 4,499,563, Cl. 367-84.000.

Juris, Mitchell A.; and Gallagher, David A., to Allied Corporation. Environmental connector assembly. 4,498,719, Cl. 339-60.00R.

Justus Technik GmbH Industrie-Anlagen: *See*—
Steinke, Hermann O.; Steinke, Roland; and Vornfett, Karl-Ulrich, 4,498,362, Cl. 83-304.000.

Kabaya, Yoshihiko, to Mitutoyo Mfg. Co., Ltd. Photoelectrical encoder employing an optical grating. 4,499,374, Cl. 250-237.00G.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Ezawa, Sadaaki, 4,498,364, Cl. 84-1.170.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Fujita, Kiyoshi; Toyohisa, Shirou; Katou, Osamu; and Ishimaru, Kenji, 4,498,988, Cl. 210-397.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Akiyama, Teruo, 4,498,847, Cl. 417-216.000.

Kabushiki Kaisha Meidensha: *See*—
Sakuma, Shinzo; Warabi, Junichi; Kano, Masayuki; and Kashimoto, Yutaka, 4,499,349, Cl. 200-144.00B.

Kabushiki Kaisha Orii Judoki Seisakusho: *See*—
Orii, Masaru, 4,498,840, Cl. 414-759.000.

Kabushiki Kaisha Sato: *See*—
Sato, Yo; and Kashiwaba, Tadao, 4,498,950, Cl. 156-577.000.

Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,499,541, Cl. 364-424.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Suzuki, Yoshihisa; Yasui, Yoshiharu; and Takasu, Shigeru, 4,498,216, Cl. 19-244.000.

Kabushiki Kaisha Yaskawa Denki Seisakusho: *See*—
Kuga, Akihiko; and Kuga, Hiroo, 4,499,546, Cl. 364-474.000.

Kachajian, George S.; Steere, Robert E., Jr.; and Charles, Wesley, to Silicon Technology Corporation. Precision tensioning device for ID saw blade. 4,498,449, Cl. 125-15.000.

Kadokura, Hidekimi; and Umezaki, Hiroshi, to Sumitomo Chemical Company, Limited. Pigmented aluminum oxide powder and method of producing the same. 4,498,931, Cl. 106-307.000.

Kagiwada, Reynold S.: *See*—
Stokes, Robert B.; Yen, Kuo-Hsiung; Lau, Kei-Fung; Kagiwada, Reynold S.; and Delaney, Michael J., 4,499,393, Cl. 310-313.00A.

Kahan, Alfred, to United States of America, Air Force. Cut angles for quartz crystal resonators. 4,499,395, Cl. 310-361.000.

Kahle Engineering Company: *See*—
Balnave, Peter, 4,498,945, Cl. 156-256.000.

Kainmuller, Thomas: *See*—
Buxbaum, Lothar; Breitenfellner, Franz; and Kainmuller, Thomas, 4,499,219, Cl. 524-96.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Takeda, Susumu; Mann, Allen W.; Goodrich, David G.; and Zinniger, Theodore C., 4,498,521, Cl. 164-453.000.

Kaiser, Georges J. L., to Fabrique Nationale Herstal. Hind absorber for automatic fire-arms actuated by barrel recoil. 4,498,369, Cl. 89-198.000.

Kaiser, Steven W., to Union Carbide Corporation. Production of light olefins. 4,499,327, Cl. 585-640.000.

Kajaani Oy: *See*—
Peltonen, Eero; Somerikko, Aarni; and Viitanen, Timo, 4,498,338, Cl. 73-432.00R.

Kalchschmied, Dietmar; Bonenberger, Hartmut; and Huber, Bernd, to Bayerische Motoren Werke AG. Bumper for automotive vehicles. 4,498,696, Cl. 293-126.000.

Kalfayan, Leonard J.: *See*—
Watkins, David R.; and Kalfayan, Leonard J., 4,498,538, Cl. 166-295.000.

Kamejima, Kohji: *See*—
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,498,307, Cl. 62-148.000.

Kamiya, Toshiharu: *See*—
Sasaki, Minoru; and Kamiya, Toshiharu, 4,499,459, Cl. 340-752.000.

Kamiyama, Setsuo: *See*—
Okumura, Yoshiharu; Kamiyama, Setsuo; Hosokawa, Toshihiro; and Kaneko, Katsumi, 4,499,313, Cl. 568-897.000.

Kamo, Yuichi; Mikami, Nobuo; Wakamatsu, Kazutoshi; and Naito, Kunio, to NEC Corporation. Transfer-type electromagnetic relay comprising a permanent magnet under a fixed contact stud. 4,499,442, Cl. 335-79.000.

Kamoshida, Yoichi: *See*—
Hosaka, Yoshihiro; Kamoshida, Yoichi; Harita, Yoshiyuki; and Harada, Kunihiro, 4,499,171, Cl. 430-192.000.

Kamping, Jan H.; and Bridge, Elmer R. Apparatus for separating a coil from following coils of coiled wire rod. 4,498,505, Cl. 140-2.000.

Kanazawa, Kay K., to International Business Machines Corporation. Electrochemical cell simulating circuit arrangement. 4,499,552, Cl. 364-802.000.

Kandros, Michael A.: *See*—
Fedder, James L.; and Kandros, Michael A., 4,498,722, Cl. 339-75.0MP.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, 4,499,331, Cl. 136-258.000.

Kaneko, Katsumi: *See*—
Okumura, Yoshiharu; Kamiyama, Setsuo; Hosokawa, Toshihiro; and Kaneko, Katsumi, 4,499,313, Cl. 568-897.000.

Kaneko, Takashi: *See*—
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,499,241, Cl. 525-211.000.

Kano, Keiichi: *See*—
Onda, Tsutomu; Kano, Keiichi; and Itakura, Shinji, 4,498,965, Cl. 204-228.000.

Kano, Masayuki: *See*—
Sakuma, Shinzo; Warabi, Junichi; Kano, Masayuki; and Kashimoto, Yutaka, 4,499,349, Cl. 200-144.00B.

Kaplit, Michael, to Du Pont de Nemours, E. I., and Company. Data compression system for a photometer. 4,498,781, Cl. 356-435.000.

Karacsonyi, Bela: *See*—
Tomko, Bela; Marai, Geza; and Karacsonyi, Bela, 4,499,110, Cl. 426-69.000.

Kardashian, Vahram S.: *See*—
Huston, Dennis L.; Kardashian, Vahram S.; and Mones, Arthur H., 4,498,954, Cl. 156-651.000.

Karning, Heinrich; Prein, Franz; and Vierling, Karl-Heinz. Laser system. 4,499,582, Cl. 372-93.000.

Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, to Nissan Motor Company, Limited; and Clarion Co., Ltd. Speaker for automotive audio system with vehicle panel utilized as sound amplifying medium. 4,499,340, Cl. 179-115.5DV.

Kashimoto, Yutaka: *See*—
Sakuma, Shinzo; Warabi, Junichi; Kano, Masayuki; and Kashimoto, Yutaka, 4,499,349, Cl. 200-144.00B.

Kashiwaba, Tadao: *See*—
Sato, Yo; and Kashiwaba, Tadao, 4,498,950, Cl. 156-577.000.

Kashiwagi, Hiroo, to Toyota Jidosha Kabushiki Kaisha. Motor vehicle centering system. 4,498,243, Cl. 33-203.120.

Kastar, Inc.: *See*—
Epstein, Harry, 4,498,239, Cl. 33-168.00R.

Katagiri, Masayoshi; and Kondo, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Friction-pad wear-limit warning device for disc brakes. 4,498,559, Cl. 188-1.110.

Kato, Kiichi: *See*—
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.

Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.

Katohno, Noboru: *See*—
Yoshida, Masashi; Katohno, Noboru; Yokota, Hajime; and Okayama, Masao, 4,499,512, Cl. 360-90.000.

Katou, Osamu: *See*—
Fujita, Kiyoshi; Toyohisa, Shirou; Katou, Osamu; and Ishimaru, Kenji, 4,498,988, Cl. 210-397.000.

Katsura, Masaki; Harata, Mituo; Takikawa, Osamu; and Shiratori, Masayuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Cation emission type halogenated hydrocarbon gas detecting element. 4,499,054, Cl. 422-98.000.

Kawada, Hiroshi: *See*—
Hasebe, Nobuhisa; Kawada, Hiroshi; and Komine, Isamu, 4,498,518, Cl. 164-416.000.

Kawamata, Masaru: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,499,541, Cl. 364-424.000.

Kawata, Ken: *See*—
Hirai, Hiroyuki; and Kawata, Ken, 4,499,180, Cl. 430-559.000.

Kawata, Shoji: *See*—
Hamajima, Shigemitsu; Nishimura, Tomoaki; Sakakibara, Naoji; and Kawata, Shoji, 4,499,542, Cl. 364-424.100.

Kawazoe, Shunji: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,499,247, Cl. 526-142.000.

Keane, Philip A.: *See*—
Torino, Arthur J., Jr.; Bouchard, George A.; and Keane, Philip A., 4,499,466, Cl. 343-7.300.

Kear, Bernard H.: *See*—
Holiday, Paul R., deceased; Holiday, Suzanne N., executrix; and Kear, Bernard H., 4,499,155, Cl. 428-586.000.

Kedrowski, Thomas J.: *See*—
Wellinghoff, Stephen T.; Jenekhe, Samson A.; and Kedrowski, Thomas J., 4,499,008, Cl. 252-500.000.

Keeffe, William M.: *See*—
Fohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., 4,499,396, Cl. 313-25.000.

Keeling, Ronald J.: *See*—
Blasing, Elmer P.; Keeling, Ronald J.; and Roe, Jin-Young K., 4,499,125, Cl. 428-503.000.

Keiper Recaro GmbH & Co.: *See*—
Schmidhuber, Karl; Wall, Helmut; and Demovic, Vojtech, 4,498,703, Cl. 297-328.000.

Kelmachter, Barry L.: *See*—
Weinstein, Paul; and Kelmachter, Barry L., 4,498,917, Cl. 65-2.000.

Kendall Company, The: *See*—
Schortmann, Walter E., 4,499,139, Cl. 428-245.000.

KenoGard AB: *See*—
Lundin, Claes O. A.; and Simonsson, Berit I., 4,499,250, Cl. 526-209.000.

Kent, Gary D.; Intorp, Norbert B.; and Springstead, Thomas H., to Parker Chemical Company. Zinc phosphate conversion coating composition. 4,498,935, Cl. 148-6.15Z.

Kerimis, Dimitrios; Muller, Hanns P.; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the preparation of polyisocyanates containing isocyanurate groups and their use for the preparation of isocyanate-polyaddition products. 4,499,253, Cl. 528-45.000.

Kesling, Peter C., to TP Laboratories, Inc. Convertible orthodontic appliance. 4,498,867, Cl. 433-16.000.

Kesterson, John W. Radar tester. 4,499,469, Cl. 343-17.700.

Kettner, Charles A.: *See*—
Shenvi, Ashokkumar B.; and Kettner, Charles A., 4,499,082, Cl. 514-2.000.

Khaan, Dennis: *See*—
Campolini, John; and Khaan, Dennis, 4,499,562, Cl. 366-264.000.

Kiat, Wee S.: *See*—
Chee, Aik T.; and Kiat, Wee S., 4,499,333, Cl. 174-52.0FP.

Kiba, Hiroshi; Itoh, Yoshimasa; and Kiryu, Kiyuji, to Mazda Motor Corporation; and Tokico Ltd. Vehicle body painting robot. 4,498,414, Cl. 118-663.000.

Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., to W. R. Grace & Co. Doubly promoted catalyst with high geometric surface area. 4,499,206, Cl. 502-304.000.

Kimball, David V. Method and apparatus for two-axis screening vibration. 4,498,343, Cl. 73-663.000.

Kimbara, Hidenori: *See*—
Ikeguchi, Nobuyuki; and Kimbara, Hidenori, 4,499,245, Cl. 525-417.000.

Kimberly-Clark Corporation: *See*—
Krause, Charles E.; and Moore, William J., 4,498,944, Cl. 156-205.000.

Kimura, Haruo: *See*—
Fujita, Teizo; and Kimura, Haruo, 4,499,352, Cl. 200-296.000.

King, Eddie W.; and Morgan, Annis R., Jr., to Coca-Cola Company, The. Multiple purchase discount module for a single price vending machine. 4,498,570, Cl. 194-1.00N.

King, William R.: *See*—
LaSpisa, Ronald J.; Likins, Merle R., Jr.; and King, William R., 4,498,428, Cl. 122-448.00R.

Kingston, Alan C., to Trenwyth Industris, Inc. Faced masonry units and facing composition therefor. 4,499,142, Cl. 428-331.000.

Kinkle, Robert W., to Budd Company, The. Extendible and contractible vehicle bulkhead. 4,498,824, Cl. 410-121.000.

Kinkle, Robert W.: *See*—
McCafferty, Gerald P.; Navoczynski, Stanley J.; and Kinkle, Robert W., 4,498,264, Cl. 52-281.000.

Kinnamon, Herbert D., to Burks, Loyce O., a part interest. Apparatus for forming adobe bricks and drilling wells. 4,498,857, Cl 425-361.000.

Kinoshita, Ryohei: *See*—
Tanaka, Toshiaki; Fukai, Masao; Onuma, Tatsuro; and Kinoshita, Ryohei, 4,498,256, Cl. 40-475.000.

Kinoshita, Takao: *See*—
Tanaka, Nobuyoshi; and Kinoshita, Takao, 4,499,496, Cl. 358-213.000.

Kinoshita, Takashi: *See*—
Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, 4,498,891, Cl. 474-205.000.

Kirkpatrick, H. B.: *See*—
Kirkpatrick, Harold B.; Ravreby, Fred A.; and Richbourg, Henry L., 4,498,467, Cl. 128-90.000.

Kirkpatrick, Harold B.; Ravreby, Fred A.; and Richbourg, Henry L., to Kirkpatrick, H. B.; and Ravreby, F. A. Orthopedic cast, device and method for forming same and package therefor. 4,498,467, Cl. 128-90.000.

Kirkpatrick, Larry E.; and Williams, Barry C., to Polydrain, Inc. Drainage channel with means for maintaining proper slope during installation. 4,498,807, Cl. 405-43.000.

Kirkpatrick, Robert D.; and Weiler, David W., to Union Carbide Corporation. Gas-liquid contacting tray with improved inlet bubbling means. 4,499,035, Cl. 261-114.0JP.

Kirsch, Francis, to Sanofi. Method for the therapeutic utilization of Coenzyme A. 4,499,074, Cl. 424-94.000.

Kiryu, Kiyuji: *See*—
Kiba, Hiroshi; Itoh, Yoshimasa; and Kiryu, Kiyuji, 4,498,414, Cl. 118-663.000.

Kishi, Noriyuki: *See*—
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, 4,498,445, Cl. 123-489.000.

Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, to Hiradastechnikai Gepgyar. Method of and apparatus for measuring surface temperature of moving objects, particularly measuring the temperature of fibrous products particularly of wires during production. 4,498,789, Cl. 374-164.000.

Kitade, Nobumitsu, to Fuji Jukogyo Kabushiki Kaisha. Air breather structure for oil seals in an automatic transmission. 4,498,353, Cl. 74-606.00R.

Kjaer, Jens B.: *See*—
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Klein, Artur, to General Electric Company. Gang saw for cutting blocks of stone. 4,498,450, Cl. 125-16.00R.

Kleinewefers GmbH: *See*—
Pav, Josef; Schmitz, Wimmar; and Wenzel, Reinhard, 4,498,383, Cl. 100-162.00B.

Kleinman, Edward F.: *See*—
Pirie, Donald K.; Volkmann, Robert A.; and Kleinman, Edward F., 4,499,017, Cl. 260-245.20R.

Klemarczyk, Philip T., to International Flavors & Fragrances Inc. Use in augmenting or enhancing aroma of perfumed article with acyloxy alkanols and esters thereof. 4,498,996, Cl. 252-8.600.

Klijanowicz, James E.: *See*—
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,499,304, Cl. 564-92.000.

Klockner-Humboldt-Deutz AG: *See*—
Rake, Heinrich; Herchenbach, Horst; Jager, Gernot; and Franck, Gerhard, 4,498,930, Cl. 106-100.000.

Klotz, Marvin R.; and Peters, Edwin F., to Standard Oil Company (Indiana). Alkene conversion using AMS-1B crystalline borosilicate. 4,499,325, Cl. 585-671.000.

Kluge, Arthur F.; and Clark, Robin D., to Syntex (U.S.A.) Inc. Benzodioxanyl-hydroxyethyleneamino-piperidinyl acetanilides, ketones, esters and carbamates which effect immunity and calcium entry and β-blockade. 4,499,100, Cl. 514-321.000.

Knoos, Stellan. Thermal energy transfer system and method. 4,498,295, Cl. 60-517.000.

Knorreck, Peter; Kuhne, Wolfgang; and Muller, Norbert, to Robert Bosch GmbH. Valve for gaseous and/or liquid flow media. 4,498,499, Cl. 137-627.500.

Knox, Bruce R.; and Hruby, Andrew J., to Ardac, Inc. Apparatus for remote authorization for dispensing fluids. 4,499,464, Cl. 340-825.720.

Knox, Frank A., to Shelton, Albert; and Shelton, Verma. Reusable moisture impervious underpad. 4,499,131, Cl. 428-68.000.

Knud Simonsen Industries Limited: *See*—
Norrie, Lyle W.; Snider, Robert W.; and Simonsen, Knud, 4,498,378, Cl. 99-472.000.

Koal, Jan G. Polymer piezoelectric sensor of animal foot pressure. 4,499,394, Cl. 310-330.000.

Kobayashi, Saburo, to Casio Computer Co., Ltd. Electronic translating apparatus with extended memory. 4,499,554, Cl. 364-900.000.

Kobayashi, Shinma; and Ohsawa, Eiji, to Nissan Shatai Company, Limited. Blower control arrangement for air conditioning unit or the like. 4,498,309, Cl. 62-186.000.

Kobe Steel, Limited: *See*—
Suzuki, Tomio; and Morimoto, Kotaro, 4,498,861, Cl. 431-12.000.

Kober, Alfred E.; and Macey, Christopher J. Method of reducing high temperature slagging in furnaces and conditioner for use therein. 4,498,402, Cl. 110-345.000.

Kobzar, Vladimir E. Teeming ladle. 4,498,661, Cl. 266-239.000.

Koch Adler AG: *See*—
Landwehr, Gunter; and Meyer, Horst, 4,498,407, Cl. 112-308.000.

Kock, Wulf; Schmidberger, Rainer; and Wagner, Wolfgang, to Dornier System GmbH. Powder comprising coated tungsten grains. 4,498,395, Cl. 102-517.000.

Kodama, Hiroshi: *See*—
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.

Kodama, Ikuo; Muramatsu, Shigeru; Terasaki, Kazunori; and Morita, Takayuki, to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki. Apparatus for locating a traveling-type servicing device in a multistation textile machine. 4,498,283, Cl. 57-261.000.

Koerwer, John F., to Union Carbide Corporation. Tetrahydrotriazines for aquatic herbicidal use. 4,498,920, Cl. 71-66.000.

Kogut, Jimmy A. Control unit with separate dampers for make-up and combustion air circulation. 4,498,624, Cl. 237-53.000.

Kohn, Gustave K.; and Bamberg, Joe T., to Zoecon Corporation. 3-Phosphinyloxy-4-(substituted phenoxy)alkenoic acid esters. 4,499,271, Cl. 546-22.000.

Koibuchi, Shigeru: *See*—
Ishimaru, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, 4,499,163, Cl. 430-5.000.

Koike, Hideharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Reference voltage circuit for obtaining a constant voltage irrespective of the fluctuations of a power supply voltage. 4,499,416, Cl. 323-303.000.

Koike, Matsuhiro: *See*—
Masuda, Teruo; Abe, Takeo; and Koike, Matsuhiro, 4,498,477, Cl. 128-378.000.

Kojima, Katsuhiko; Tanaka, Toyomi; and Nakajima, Shigeo, to Nakajima Seisakusho Co., Ltd. Filling method of particulate material into valved packing bag and apparatus employed therefor. 4,498,509, Cl. 141-10.000.

Kojima, Toshitada, to Sanyo Electric Co., Ltd. Electronically controlled cooking apparatus. 4,499,357, Cl. 219-10.55B.

Kokan Kikai Kogyo Kabushiki Kaisha: *See*—
Yoshihara, Tetsuya, 4,498,611, Cl. 222-599.000.

Kollmer, Hans P.: *See*—
Traunecker, Werner; Frolke, Wilhelm; Kreuzer, Heinrich; and Kollmer, Hans P., 4,499,106, Cl. 514-603.000.

Kollmorgen Technologies Corporation: *See*—
Boesewetter, Chester C.; Langley, Lawrence W.; and Mabie, John H., 4,498,636, Cl. 242-1.10R.

Kolm, Eric A.: *See*—
Kolm, Henry H.; and Kolm, Eric A., 4,498,851, Cl. 417-322.000.

Kolm, Henry H.; and Kolm, Eric A., to Piezo Electric Products, Inc. Solid state blower. 4,498,851, Cl. 417-322.000.

Komatsu, Yuichiro: *See*—
Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikuro, 4,498,259, Cl. 51-165.710.

Komine, Isamu: *See*—
Hasebe, Nobuhisa; Kawada, Hiroshi; and Komine, Isamu, 4,498,518, Cl. 164-416.000.

Kondo, Shinichi: *See*—
Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,499,083, Cl. 514-36.000.

Kondo, Syunichi: *See*—
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,499,167, Cl. 430-83.000.

Kondo, Toshio: *See*—
Katagiri, Masayoshi; and Kondo, Toshio, 4,498,559, Cl. 188-1.110.

Kone Oy: *See*—
Martio, Asko; Reitmaa, Ilpo; and Lautamo, Esa, 4,498,479, Cl. 128-639.000.

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Koniger, Rudolf; and Koniger, Kai. Fixing anchoring bars or the like in structures such as concrete. 4,498,271, Cl. 52-707.000.

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Konishi, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Integrated circuit formed on a semiconductor substrate with a variable capacitor circuit. 4,499,387, Cl. 307-443.000.

Konishiroku Photo Ind., Co., Ltd.: *See*—
Watanabe, Kazumasa; Deguchi, Hidetaka; and Suginaka, Shunji, 4,499,181, Cl. 430-558.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Haneda, Satoshi; Itaya, Masahiko; and Tomono, Makoto, 4,499,169, Cl. 430-102.000.
Ishiyama, Shozo, 4,498,741, Cl. 350-427.000.
Ota, Hideo; and Yamashita, Kiyotoshi, 4,499,179, Cl. 430-523.000.

Konrad, Michael W.; and Mark, David F., to Cetus Corporation. Bacterial production of heterologous polypeptides under the control of a repressible promoter-operator. 4,499,188, Cl. 435-70.000.

Konstantinov, Ivan T.; Mednikarov, Borislav D.; Sahatchieva, Maria A.; and Burov, Atanas T., to Zlafop pri Ban. Photographic material for use in photolithography. 4,499,173, Cl. 430-278.000.

Kooi, Hessel; and Meijer, Sjoerd, to Selectiebedrijf Kooi Beheer B.V.; and Machine- en Constructiewerkplaats Meijer. Fork lifter comprising a slidable fork. 4,498,837, Cl. 414-664.000.

Koppers Company, Inc.: *See*—
Leston, Gerd, 4,499,312, Cl. 568-780.000.

Koppl, Georg, to BBC Brown, Boveri & Company, Limited. High-voltage switch and its use. 4,499,351, Cl. 200-148.00R.

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Tacke, Peter; Korber, Helmut; Merten, Josef; and Neuray, Dieter, 4,499,237, Cl. 525-67.000.

Korin, Eliyaho; Rappaport, Elazar; Pasternak, Dov; Roy, Aharon S.; and Wolf, David, to Ben-Gurion University of the Negev. Phase-change heat storage building panels. 4,498,459, Cl. 126-430.000.

Korpela, Thomas; and Subrick, Joseph, to United States Steel Corporation. Mine roof support system. 4,498,816, Cl. 405-259.000.

Koslowski, Gerhard: *See*—
Kupper, Wilhelm; and Koslowski, Gerhard, 4,498,644, Cl. 242-131.100.

Kosower, Edward M.; Pazhenchevsky, Barak; and Hershkowitz, Eli, to Tel Aviv University. 1,5-Diazabicyclo [3.3.0]octadienediones. 4,499,284, Cl. 548-359.000.

Kostow, Michael. Lotto dice. 4,498,671, Cl. 273-144.00B.

Koumura, Takashi: *See*—
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, 4,498,445, Cl. 123-489.000.

Kovalchik, Stephen J.: *See*—
Brown, Robert L.; Henley, Virgil E.; and Kovalchik, Stephen J., 4,498,948, Cl. 156-401.000.

Kovalerchik, Vulf P.: *See*—
Lyakhevich, Genrikh D.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,499,218, Cl. 524-79.000.

Kowalski, Gunter, to U.S. Philips Corporation. Device for the testing of bodies comprising periodic structures. 4,499,540, Cl. 364-414.000.

Krafton, Thomas J., to Gillette Company, The. Antiperspirant emulsion. 4,499,069, Cl. 424-66.000.

Krampe & Co. Fertigung in Bergbaubedarf GmbH Zweigniederlassung: *See*—
Best, Gerd; and Weikert, Norbert B., 4,498,707, Cl. 299-81.000.

Kranz, Max L.; and Gadberry, Donald L., to U.S.D. Corp. First and second stage regulator system for breathing gas. 4,498,471, Cl. 128-204.260.

Krapcho, John, to E. R. Squibb & Sons, Inc. Certain-4-hydroxy-proline derivatives. 4,499,287, Cl. 548-532.000.

Krause, Charles E.; and Moore, William J., to Kimberly-Clark Corporation. Method and apparatus for producing an elasticized garment by tucking a portion of the diaper web during bonding of elastic to the untucked portions of the web. 4,498,944, Cl. 156-205.000.

Kreamer, William. Control for solar system. 4,498,457, Cl. 126-429.000.

Kreij, Sven-Erik, to Stal-Laval Turbin AB. Gas turbine plant with a fluidized bed combustion chamber. 4,498,285, Cl. 60-39.100.

Kreij, Sven-Erik: *See*—
Brannstrom, Roine; and Kreij, Sven-Erik, 4,498,286, Cl. 60-39.100.

Kreiskott, Horst: *See*—
Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, 4,499,087, Cl. 514-211.000.

Kreuzer, Heinrich: *See*—
Traunecker, Werner; Frolke, Wilhelm; Kreuzer, Heinrich; and Kollmer, Hans P., 4,499,106, Cl. 514-603.000.

Kridl, Thomas A.; Claunch, Carney P.; and Bjornstrom, Ann O., to Raychem Corporation. Partially recoverable closure. 4,499,129, Cl. 428-36.000.

Krikor, Agop K.; and Puccini, Sergio E., to GTE Automatic Electric Inc. Common channel interoffice signaling system. 4,499,336, Cl. 179-18.0ES.

Kristensen, Kjeld: *See*—
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Kristiansen, Bjarne: *See*—
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Kromer, Gunter, to Audi Nsu Auto Auto Union Aktiengesellschaft. Fuel-injection internal-combustion engine. 4,498,435, Cl. 123-306.000.

Kroschel, Heinz: *See*—
Fischer, Klaus; Kroschel, Heinz; Nicodemus, Joachim; and Petters, Willi, 4,498,393, Cl. 102-393.000.

Kruka, Vitold R., to Shell Oil Company. Pipeline pig with restricted fluid bypass. 4,498,932, Cl. 134-8.000.

Krupp Corpoplast Maschinenplast GmbH: *See*—
Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, 4,499,044, Cl. 264-521.000.

Kubo, Akira; Ishii, Akihiko; Nishizaki, Ken; and Saito, Tomoharu, to Shinto Paint Co., Ltd. Coating composition. 4,499,225, Cl. 524-276.000.

Kubota, Naohiro: *See*—
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,499,220, Cl. 524-102.000.

Kuchuk-Yatsenko, Sergei I.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Kuckhermann, Gustav, to Icoma Packtechnik GmbH. Separation apparatus for separating perforated paper tube sections. 4,498,894, Cl. 493-234.000.

Kuga, Akihiko; and Kuga, Hiroo, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Numerical control machine tool with sliding error compensation function. 4,499,546, Cl. 364-474.000.

Kuga, Hiroo: *See*—
Kuga, Akihiko; and Kuga, Hiroo, 4,499,546, Cl. 364-474.000.

Kuhls, Jurgen: *See*—
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Jurgen, 4,499,211, Cl. 521-145.000.

Kuhne, Wolfgang: *See*—
Knorreck, Peter; Kuhne, Wolfgang; and Muller, Norbert, 4,498,499, Cl. 137-627.500.

Kukes, Simon G.; and Banks, Robert L., to Phillips Petroleum Company. Olefin metathesis and catalyst. 4,499,328, Cl. 585-646.000.

Kum, Humberto: *See*—
Arias, Beatriz; Kum, Humberto; and Galiasso, Roberto, 4,499,202, Cl. 502-211.000.

Kumai, Toshiyuki, to Murakami Kaimeido Co., Ltd. Electric mirror angle adjusting device with pivoting cross-shaped member. 4,498,738, Cl. 350-637.000.

Kummer, Emanuel: *See*—
Oetiker, Hans; and Kummer, Emanuel, 4,499,111, Cl. 426-231.000.

Kuo, Jeng-Chung: *See*—
Yeung, Edward E.; Steenhoek, Larry E.; Woodruff, Steven D.; and Kuo, Jeng-Chung, 4,498,774, Cl. 356-368.000.

Kupper, Wilhelm; and Koslowski, Gerhard, to W. Schlafhorst & Co. Creel. 4,498,644, Cl. 242-131.100.

Kurafuji, Setsuo, to Fujitsu Limited. Static RAM with bit-line-charging transistor. 4,499,559, Cl. 365-190.000.

Kuraray Co., Ltd.: *See*—
Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, 4,499,251, Cl. 526-278.000.

Kurata, Masami: *See*—
Inui, Toshiharu; Kurata, Masami; Nakajima, Hisao; and Ohmori, Takashi, 4,499,476, Cl. 346-76.0PH.

Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission casing apparatus in motorized two-wheeled vehicle. 4,498,553, Cl. 180-230.000.

Kurihara, Mamoru: *See*—
Muramatsu, Tateo; Kurihara, Mamoru; and Enami, Yasushi, 4,498,810, Cl. 405-115.000.

Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., to Fairchild Camera & Instrument Corporation. Apparatus for maintaining reserve bonding wire. 4,498,638, Cl. 242-45.000.

Kushima, Keiichi: *See*—
Tokano, Motoharu; and Kushima, Keiichi, 4,499,056, Cl. 422-299.000.

Kusunoki, Toshihiro: *See*—
Isozumi, Shoji; and Kusunoki, Toshihiro, 4,498,937, Cl. 148-171.000.

Kuwada, Yukio: *See*—
Mochizuki, Keizo; Kuwada, Yukio; and Mizoguchi, Yoshihiko, 4,499,113, Cl. 426-291.000.

Kuyel, Birol: *See*—
Banks, Edward L.; Ellington, Thomas S., IV; and Kuyel, Birol, 4,499,162, Cl. 430-5.000.

Kwasniewski, Dale L.: *See*—
Holtzhauser, Joseph C.; and Kwasniewski, Dale L., 4,498,515, Cl. 152-417.000.

Kyokuto Fatty-Acid Corporation: *See*—
Itoh, Shuji; and Hayashi, Koichi, 4,498,943, Cl. 156-164.000.

L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques: *See*—
Anne, Jean, 4,499,518, Cl. 361-306.000.

Laage, Neil A.: *See*—
Cooke, Ronald D.; and Laage, Neil A., 4,498,249, Cl. 34-125.000.

LaCamera, Alfred F.: *See*—
Phelps, Frankie E.; Francis, Thomas L.; and LaCamera, Alfred F., 4,499,193, Cl. 501-98.000.

Lacourse, Norman L.: *See*—
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., 4,499,116, Cl. 426-582.000.

Laerum, Ole D., to Nyegaard & Co A/S. Peptide compounds. 4,499,081, Cl. 514-17.000.

Lagowski, Jacek: *See*—
Jastrzebski, Lubomir L.; and Lagowski, Jacek, 4,498,772, Cl. 356-357.000.

L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude: *See*—
Roussel, Jacques, 4,498,705, Cl. 299-4.000.

Lakdawala, Ness: *See*—
Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, 4,498,308, Cl. 62-184.000.

Lake, Ralph J., Jr.: *See*—
Del Tufo, Mark J.; Lake, Ralph J., Jr.; and Solomon, Stephen R., 4,498,802, Cl. 403-300.000.

Lalezari, Iraj, to Montefiore Hospital and Medical Center, Inc. Mixed anhydrides and processes thereof. 4,499,020, Cl. 260-397.100.

Lambrechts, Adriaanus L.: *See*—
Botha, Charles F.; and Lambrechts, Adriaanus L., 4,498,856, Cl. 425-331.000.

Lambro Industries, Inc.: *See*—
Benevento, Peter J., 4,498,247, Cl. 34-82.000.

Lamby, Edward J.: *See*—
Spiro, Clifford L.; and Lamby, Edward J., 4,499,311, Cl. 568-660.000.

Lance, Wayne E.; and Rayfield, Wilson P., to Burroughs Corporation. Demountable, modular toner-fuser assembly for electrographic print apparatus. 4,498,757, Cl. 355-3.0FU.

Landwehr, Gunter; and Meyer, Horst, to Koch Adler AG. Sewing machine work piece turning device. 4,498,407, Cl. 112-308.000.

Lanfranconi, Gianmario; and Monti, Giuseppe, to Societa' Cavi Pirelli S.p.A. Process for laying a submarine cable. 4,498,812, Cl. 405-168.000.

Langford, Forrest L.: *See*—
Therien, Robert D.; Langford, Forrest L.; Motamed, Armond; and Williams, Robert D., 4,498,761, Cl. 355-24.000.

Langley, Keith W.; and Washbourn, Jack, to Westinghouse Brake and Signal. Pneumatic control for braking system providing snow brake operation. 4,498,711, Cl. 303-13.000.

Langley, Lawrence W.: *See*—
Boesewetter, Chester C.; Langley, Lawrence W.; and Mabie, John H., 4,498,636, Cl. 242-1.10R.

Langridge, Peter J.: *See*—
Ealovega, George D.; and Langridge, Peter J., 4,498,744, Cl. 352-89.000.

Large, Donald M.: *See*—
Beltz, Richard K.; and Large, Donald M., 4,498,451, Cl. 125-23.00R.

Larkey, John T.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

LaSpisa, Ronald J.; Likins, Merle R., Jr.; and King, William R., to Phillips Petroleum Company. Combustion control for a boiler. 4,498,428, Cl. 122-448.00R.

Lasvaladas, Jean-Jacques: *See*—
Prioux, Jean-Jacques; Meleard, Roger; Pioger, Michel; and Lasvaladas, Jean-Jacques, 4,499,343, Cl. 200-5.00A.

Latham, Peter A.: *See*—
Gainsboro, Leon; and Latham, Peter A., 4,498,423, Cl. 119-51.00R.

Lau, Kei-Fung: *See*—
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Laumain, Francois: *See*—
Bernard, Michel; Balde, Daniel; Ghenassia, Elie; and Laumain, Francois, 4,499,222, Cl. 524-123.000.

Launay, Jean-Pierre: *See*—
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Lausarot, Aldo: *See*—
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Lautamo, Esa: *See*—
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Lawrence, Randall K.: *See*—
Stevens, Aaron A.; and Lawrence, Randall K., 4,498,889, Cl. 474-133.000.

Lazarz, Christine A.; and Cook, Edward H., Jr., to Occidental Chemical Corporation. Method of electrolyzing brine with stable low voltage microporous diaphragm in electrolytic cells. 4,498,961, Cl. 204-98.000.

Lear Siegler, Inc.: *See*—
Pareja, Ramon, 4,498,372, Cl. 92-187.000.

Leas, Arnold M.; and Leas, Lawrence E. Rotary engine. 4,498,290, Cl. 60-39.550.

Leas, Lawrence E.: *See*—
Leas, Arnold M.; and Leas, Lawrence E., 4,498,290, Cl. 60-39.550.

Leavoson-Gesellschaft m.b.H. & Co. KG: *See*—
Binder, Dieter, 4,499,286, Cl. 548-527.000.

Le Berre, Serge; and Hareng, Michel, to Thomson-CSF. Liquid crystal display device associating two addressing modes. 4,499,458, Cl. 340-713.000.

Lecompte, Michel: *See*—
Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, 4,498,308, Cl. 62-184.000.

Lednor, Peter W.: *See*—
Hoek, Arend; Post, Martin F. M.; Minderhoud, Johannes K.; and Lednor, Peter W., 4,499,209, Cl. 518-707.000.

Lee, May D.; Martin, John H.; Borders, Donald B.; Yao, Raymond C.; and Testa, Raymond T., to American Cyanamid Company. Antibiotic agents from *S. coeruleorubidus*, rubidus. 4,499,075, Cl. 424-118.000.

Leedall Products Incorporated: *See*—
Brown, Albert E.; and Emerson, Robert T., 4,499,140, Cl. 428-308.400.

Leflar, James A.; and Wardlow, William C., to International Solarpanel, Inc. Solar collector construction and sealing arrangement. 4,498,265, Cl. 52-403.000.

Le Fur, Gerard: *See*—
Dubroeucq, Marie-Christine; Renault, Christian; and Le Fur, Gerard, 4,499,094, Cl. 514-301.000.

LeGrand, Donald G.: *See*—
Anthony, Blair T.; and LeGrand, Donald G., 4,499,224, Cl. 524-261.000.

Leis, Hans, to Messerschmitt-Bolkow-Blohm. Heatable centrifuge. 4,498,896, Cl. 494-14.000.

Leland Stanford Junior University, The Board of Trustees of the: *See*—
Nishimura, Dwight G., 4,499,493, Cl. 358-111.000.
Lemke, Judith K. Estrus cycle monitoring system. 4,498,481, Cl. 128-734.000.
Lenchin, Julianne M.: *See*—
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., 4,499,116, Cl. 426-582.000.
Lenth, Jurgen: *See*—
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Le Page, Jean-Francois: *See*—
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Lepisto, J. George, to Champion International Corporation. Apparatus for filling a valve bag. 4,498,511, Cl. 141-85.000.
Leppelmeier, Elton T.; and Ewing, Frank I., to General Electric Company. Skin tanning fluorescent lamp construction utilizing a phosphor combination. 4,499,403, Cl. 313-487.000.
Leroy, Jean-Luc; and Dejeux, Pol, to Framatome & Cie. Superheated steam generator comprising bank of U-tubes. 4,498,426, Cl. 122-32.000.
Leston, Gerd, to Koppers Company, Inc. Complex formed to separate 3,5-xylenol or 3,4-xylenol from other polymethylated phenolic compounds. 4,499,312, Cl. 568-780.000.
Leuschner, Peter, to Holscher & Leuschner GmbH & Co. Animal feeding method and apparatus. 4,498,424, Cl. 119-51.00R.
Leveille, Michael A.; and Walker, Charles F., to AT&T Bell Laboratories. Alarm circuit interface units. 4,499,455, Cl. 340-531.000.
Leveque, Alain: *See*—
Fitoussi, Richard; Leveque, Alain; and Sabot, Jean-Louis, 4,499,058, Cl. 423-70.000.
Lever Brothers Company: *See*—
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Levin, Robert F.: *See*—
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Levine, Michael A. Weak-source for cryogenic semiconductor device. 4,499,482, Cl. 357-30.000.
Levine, Peter A., to RCA Corporation. CCD Imager with improved low light level response. 4,499,497, Cl. 358-213.000.
Lew, Hyok S.: *See*—
Lew, Yon S.; and Lew, Hyok S., 4,498,371, Cl. 92-2.000.
Lew, Yon S.; and Lew, Hyok S. Direct acting rotary actuator cylinder. 4,498,371, Cl. 92-2.000.
Lewinter, Sidney W., to Aerospace Corporation, The. Digital to analog converter. 4,499,594, Cl. 381-46.000.
Lewis, Paul J. S.: *See*—
Atkinson, Bernard; Black, Geoffrey M.; Pinches, Anthony; and Lewis, Paul J. S., 4,498,985, Cl. 210-151.000.
Leyco, Reynaldo P.: *See*—
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Leyerle, Richard W., to UOP Inc. Process for removing alumina or silica substrate from carbonaceous pyropolymers. 4,499,201, Cl. 502-180.000.
LFE Corporation: *See*—
Walker, Wellington J.; and Whitehouse, George M., deceased, 4,498,354, Cl. 74-625.000.
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Lichtenstein, Joseph: *See*—
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Liden, Hadar, to Gotaverken Arendal AB. Offshore platform. 4,498,412, Cl. 114-264.000.
Ligneres, Pierre: *See*—
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Lincoln, Frank H.: *See*—
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Lindgren, Douglas L.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.
Lindsey, Hiram E., Jr., to MWL Tool and Supply Company. Liner hanger assembly. 4,498,534, Cl. 166-208.000.
Link, Theodore P.: *See*—
Walters, Donald N.; and Link, Theodore P., 4,498,688, Cl. 280-7.120.
Lipschutz, Lewis D., to International Business Machines Corporation. Flexible thermal conduction element for cooling semiconductor devices. 4,498,530, Cl. 165-185.000.
Lisauskas, Richard J., to Texas Instruments Incorporated. Motor protector particularly suited for use with compressor motors. 4,499,517, Cl. 361-24.000.
Liu, Huei-Cheng; and Spohn, Ralph J., to Exxon Research & Engineering Co. Modified zeolite catalyst composition and process for alkylating toluene with methanol to form styrene. 4,499,317, Cl. 585-438.000.
Liu, Huei-Cheng, to Exxon Research & Engineering Co. Modified zeolite catalyst composition and process for alkylating toluene with methanol to form styrene. 4,499,318, Cl. 585-438.000.
Livingstone, Jeanne. Garment having concealed pouch. 4,498,200, Cl. 2-247.000.
Lloyd-Davies, William: *See*—
Scholle, William R.; and Lloyd-Davies, William, 4,498,508, Cl. 141-5.000.
Locher, Johannes; and Schaller, Dieter, to Robert Bosch GmbH. Regulating device for an electromagnetic control element, especially in an internal combustion engine with auto-ignition. 4,499,412, Cl. 318-592.000.
Lockhart, Thomas P., to General Electric Company. One package, stable, moisture curable, alkoxy-terminated organopolysiloxane compositions. 4,499,229, Cl. 524-450.000.
Lockhart, Thomas P., to General Electric Company. One package, stable, moisture curable, alkoxy-terminated organopolysiloxane compositions containing a zeolite. 4,499,230, Cl. 524-450.000.
Lockheed Corporation: *See*—
DeLuca, Frank T.; and Dobson, Gordon A., 4,498,648, Cl. 244-118.300.
Loda, Gary K., to RPC Industries. Hot cathode for broad beam electron gun. 4,499,405, Cl. 315-13.100.
Loeding, Neil W.: *See*—
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Lohse, Friedrich; and Zondler, Helmut, to Ciba Geigy Corporation. Process for the preparation of isomelamines. 4,499,268, Cl. 544-196.000.
Lok, Brent M.: *See*—
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Lombardi, Gerald T.: *See*—
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Long, Jerry M.; and Womack, James A., to Innovative Concepts, Inc. Diskette storage container for storing a large quantity of diskettes. 4,498,583, Cl. 206-444.000.
Long, Stanley A.: *See*—
McSweeney, Robert T.; and Long, Stanley A., 4,499,521, Cl. 361-321.000.
Longley, Kermit D., to Witco Chemical Corporation. Preparation of isethionic acid. 4,499,028, Cl. 260-513.00R.
Loontjens, Jacobus A., to Stamicarbon B.V. Thermoplastic propylene block copolymer containing 1-alkene-propylene-diene copolymer block. 4,499,242, Cl. 525-289.000.
Loose, Peter W., to European Electronic Systems Ltd. Edge detection apparatus. 4,499,383, Cl. 250-561.000.
Lopez De Romana, Eduardo A., to Discovision Associates. Writing beam focus monitor. 4,499,569, Cl. 369-45.000.
Lord Corporation: *See*—
Balczun, Paul J., 4,498,679, Cl. 277-92.000.
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Sebag, Henri; and Vanlerberghe, Guy, 4,499,070, Cl. 424-70.000.
Lotsof, Howard S. Rapid method for interrupting the narcotic addiction syndrome. 4,499,096, Cl. 514-214.000.
Lotz, Carla, nee Post, Andreas Lotz, heirs: *See*—
Proksch, Hans-Jorg; Welte, Dieter; Zimmer, Herbert; and Lotz, Michael, deceased, 4,498,646, Cl. 244-35.00R.
Lotz, Michael, deceased: *See*—
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Love, Richard R. Loading ramp for truck bed. 4,498,836, Cl. 414-537.000.
Lovitt, Robert O., to Fredrick, Michael Douglas. Self-cleaning cage. 4,498,421, Cl. 119-17.000.
Lucas, Gary M.: *See*—
Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, 4,499,234, Cl. 524-783.000.
Lucas Industries public limited Company: *See*—
Smith, Robert J., 4,498,710, Cl. 303-6.00R.
Luccarelli, Domenick, Jr.; Mookherjee, Braja D.; Wilson, Richard A.; Zampino, Michael J.; and Bowen, David R., to International Flavors & Fragrances Inc. Flavoring some tropical flavored foodstuffs with mixture of C_4–C_{10} -N-alkanoic acid and ethyl ester of 2-hydroxy-4-methyl pentanoic acid. 4,499,114, Cl. 426-534.000.
Luh, Howard H., to Ford Aerospace & Communications Corporation. Reconfigurable dual mode network. 4,499,471, Cl. 343-373.000.
Lundin, Claes O. A.; and Simonsson, Berit I., to KenoGard AB. Process for the polymerization of ethylenically unsaturated monomers. 4,499,250, Cl. 526-209.000.
Lunk, Hans E.: *See*—
Cornelius, Rajendra S.; Martin, Albert R.; Lunk, Hans E.; and Mendenhall, Mark D., 4,499,438, Cl. 333-1.000.
Lunz, Alfred-Gunther: *See*—
Grimmer, Horst; and Lunz, Alfred-Gunther, 4,498,788, Cl. 368-106.000.
Lyakhevich, Genrikh D.; Suzansky, Vasily G.; and Kovalerchik, Vulf P. Vulcanizable rubber compound. 4,499,218, Cl. 524-79.000.
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Whitely, Elliot F.; Devoe, Richard A.; and Gadbois, Gerald W., 4,499,134, Cl. 428-102.000.
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Baron, Richard D., 4,498,275, Cl. 53-306.000.

Lyle, Stephen V., to T.A.D. Avanti, Inc. Announcement recording and message playback system for a telephone answering machine. 4,499,335, Cl. 179-6.030.

Lynch, John T.; Anderson, Alfredo C.; Withers, Richard S.; and Wright, Peter V., to Massachusetts Institute of Technology. Superconducting signal processing circuits. 4,499,441, Cl. 333-161.000.

Lynch, Michael W.: *See*—
Pullukat, Thomas J.; Hoff, Raymond E.; and Lynch, Michael W., 4,499,198, Cl. 502-104.000.

Lynch, Robert C.: *See*—
Broockman, Eric C.; Cato, Robert T.; and Lynch, Robert C., 4,499,608, Cl. 455-607.000.

M&T Chemicals Inc.: *See*—
Berger, Abe, 4,499,149, Cl. 428-447.000.

Maag Gear-Wheel & Machine Company Limited: *See*—
Thoma, Peter, 4,498,335, Cl. 73-162.000.

Maas, Michael F., to Honeywell Inc. Phase velocity sign detector for frequency shift key demodulation. 4,499,425, Cl. 329-50.000.

Maathuis, Antonnis G.; and Parsons, Anthony W., to Goodyear Tire & Rubber Company, The. Reinforcing belt for tires with radial casing. 4,498,514, Cl. 152-356.00R.

Mabie, John H.: *See*—
Boesewetter, Chester C.; Langley, Lawrence W.; and Mabie, John H., 4,498,636, Cl. 242-1.10R.

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Blundell, David J.; Griffin, Brian P.; and MacDonald, William A., 4,499,256, Cl. 528-172.000.

Macey, Christopher J.: *See*—
Kober, Alfred E.; and Macey, Christopher J., 4,498,402, Cl. 110-345.000.

Machine- en Constructiewerkplaats Meijer: *See*—
Kooi, Hessel; and Meijer, Sjoerd, 4,498,837, Cl. 414-664.000.

Mack, William; Morrison, Herbert; and Chiapetta, Frank, to Clairol Incorporated. Hair trimmer. 4,498,237, Cl. 30-200.000.

Mackal, Glenn H. Automatic inflator. 4,498,604, Cl. 222-5.000.

Mackal, Glenn H.; and TenBarge, John S., to Halkey-Roberts Corporation. Automatic inflator. 4,498,605, Cl. 222-5.000.

Mackensen, Klaus: *See*—
Heinze, Helmut; Wilhelm, Fritz; Mackensen, Klaus; and Finkeldei, Ferdinand, 4,499,261, Cl. 528-279.000.

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Blackburn, Gary R.; Mackerer, Carl R.; and Schreiner, Ceinwen A., 4,499,187, Cl. 435-34.000.

MaCleod, Donald J., to Applied Motion Products, Inc. Brushless DC motor assembly with improved stator pole. 4,499,407, Cl. 318-254.000.

MacPherson, William F.: *See*—
Hudson, Robert C.; MacPherson, William F.; and Sharpless, Charles H., 4,499,532, Cl. 363-21.000.

Madonia, Ralph J.: *See*—
Questel, John M.; and Madonia, Ralph J., 4,499,130, Cl. 428-42.000.

Madonna, William J. Stimulus/response device. 4,498,870, Cl. 434-335.000.

Maeda, Masaya: *See*—
Edakubo, Hiroo; and Maeda, Masaya, 4,499,504, Cl. 358-335.000.

Maeguchi, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a MOSFET using accelerated ions to form an amorphous region. 4,498,224, Cl. 29-571.000.

Maemoto, Kenichi; and Jinno, Kazushi, to Nissen Chemical Industries Co., Ltd. Production of stabilized plastic sheet. 4,499,040, Cl. 264-167.000.

Maffione, Grazia: *See*—
Moro, Luigi; Maffione, Grazia; Neri, Guido; and Rigamonti, Alessandro, 4,499,066, Cl. 424-19.000.

Mair, Bernard. Fastening device. 4,498,827, Cl. 411-349.000.

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Babai, Matzliach; and Maishar, Uzi, 4,499,160, Cl. 429-101.000.

Makarov, George. Mass accelerator and power converter unit. 4,498,357, Cl. 74-752.00F.

Makita, Fujio, to Fuji Jukogyo Kabushiki Kaisha. System to detect slippage of a clutch for an internal combustion engine. 4,499,450, Cl. 340-52.00R.

Makley, James A.: *See*—
Hamisch, Paul H., Jr.; and Makley, James A., 4,498,947, Cl. 156-384.000.

Makosch, Gunter; and Schedewie, Franz, to International Business Machines Corporation. Method and means for interferometric surface topography. 4,498,771, Cl. 356-351.000.

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Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Malhotra, Sudarshan K.; and Orvik, Jon A., to Dow Chemical Company, The. Reduction of trichloromethylpyridines to dichloromethylpyridines. 4,499,277, Cl. 546-346.000.

Malhotra, Sudarshan K.; and Orvik, Jon A., to Dow Chemical Company, The. Reduction of trichloromethylpyridines to dichloromethylpyridines. 4,499,276, Cl. 546-346.000.

Malik, James J. Wire rack for plastic bag. 4,498,652, Cl. 248-99.000.

Mallory, Henry R., to Duracell Inc. Constant illumination flashlight. 4,499,525, Cl. 362-157.000.

Malloy, Thomas P.; and Engel, Dusan J., to UOP Inc. 4-Vinylbenzeneacetic acid. 4,499,300, Cl. 562-495.000.

Manikian, Victor; and McDonald, Giles N., to Atlantic Richfield Company. Process for prevention of ice buildup and reduction of ice forces on structures during breakup. 4,498,808, Cl. 405-61.000.

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Jaschinski, John J., 4,498,607, Cl. 222-146.600.

Manley, Norman G. Can crusher. 4,498,385, Cl. 100-233.000.

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Takeda, Susumu; Mann, Allen W.; Goodrich, David G.; and Zinniger, Theodore C., 4,498,521, Cl. 164-453.000.

Mann, George H., to Corning Glass Works. Method for making colored photochromic prescription ophthalmic lenses. 4,498,919, Cl. 65-30.110.

Manufacture de Machines du Haut-Rhin: *See*—
Greslin, Bernard P.; and Rohmer, Daniel J., 4,498,234, Cl. 29-785.000.

Marai, Geza: *See*—
Tomko, Bela; Marai, Geza; and Karacsonyi, Bela, 4,499,110, Cl. 426-69.000.

Maresca, Louis M., to Union Carbide Corporation. Poly(ester-carbonate)s. 4,499,257, Cl. 528-173.000.

Margolia, Mark D., to Spearhead Industries, Inc. Multiple headed costume. 4,498,199, Cl. 2-69.000.

Marinack, Robert J.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

Mark, David F.: *See*—
Konrad, Michael W.; and Mark, David F., 4,499,188, Cl. 435-70.000.

Marker, Frank P., to Marker, Hannes. Sailboard rig and boom. 4,498,411, Cl. 114-97.000.

Marker, Hannes: *See*—
Marker, Frank P., 4,498,411, Cl. 114-97.000.

Marouf, Mohamed A.; and Vancil, Paul W., to AT&T Bell Laboratories. Method and apparatus for controlling signal level in a digital conference arrangement. 4,499,578, Cl. 370-62.000.

Marpoe, Gary R., Jr.: *See*—
Bright, Edward J.; Marpoe, Gary R., Jr.; Schuemann, Klaus D.; and Sheesley, Wilmer L., 4,498,725, Cl. 339-176.00M.

Marrocco, Matthew L., to Cities Service Oil and Gas Corporation. Gel for retarding water flow. 4,498,540, Cl. 166-295.000.

Marshall, George C., Jr., to General Dynamics, Pomona Division. Method for solder tinning of component leads. 4,499,120, Cl. 427-123.000.

Martin, Albert R.: *See*—
Cornelius, Rajendra S.; Martin, Albert R.; Lunk, Hans E.; and Mendenhall, Mark D., 4,499,438, Cl. 333-1.000.

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Martin, John H.: *See*—
Lee, May D.; Martin, John H.; Borders, Donald B.; Yao, Raymond C.; and Testa, Raymond T., 4,499,075, Cl. 424-118.000.

Martin, Peter, to Philip Morris Incorporated. Rotary beam chopper with continuously variable duty cycle. 4,499,362, Cl. 219-121.0LA.

Martin, Robert J.: *See*—
Ray, John M., III; and Martin, Robert J., 4,499,550, Cl. 364-606.000.

Martinez-Vera, Enrique; Guerra-Garcia, Gilberto; and Tovalin, Jose L. L., to Hylsa, S.A. Double valve assembly. 4,498,498, Cl. 137-613.000.

Martino, Germain: *See*—
Juguin, Bernard; Martino, Germain; and Miquel, Jean, 4,498,907, Cl. 44-56.000.

Martino, Phillip C., to SCM Corporation. Thermosetting acrylic latexes. 4,499,212, Cl. 523-201.000.

Martio, Asko; Reitmaa, Ilpo; and Lautamo, Esa, to Kone Oy. Electrocardiograph (ECG) electrode testing system. 4,498,479, Cl. 128-639.000.

Marvel, Carl S.; and Lin, See, to United States of America, Air Force. Polyaromatic ether-sulfone-keytones with fluoro-substituted-p-cyclophane units as cross-linking sites. 4,499,258, Cl. 528-173.000.

Marvin Glass & Associates: *See*—
Ferris, Michael J.; Wise, Paul H.; and Breslow, Jeffrey D., 4,498,674, Cl. 273-243.000.

Maryanoff, Cynthia A., to McNeilab, Inc. Process for production of methyl 2-tetradecylgycidate. 4,499,294, Cl. 549-519.000.

Masaitis, William; and Canada, Robert O., to General Electric Co. System and method for pattern recognition. 4,499,595, Cl. 382-9.000.

Maschinenfabrik Alfred Schmermund GmbH & Co.: *See*—
Vorhauer, Hans, 4,498,274, Cl. 53-412.000.

Mase, Ryoichi, to Toso Kabushiki Kaisha. Braking device for use in a roller blind. 4,498,517, Cl. 160-294.000.

Mase, Sadaaki: *See*—
Minowa, Nobuto; Fukatsu, Shunzo; Tachibana, Kunitaka; Niida, Taro; and Mase, Sadaaki, 4,499,027, Cl. 260-502.50G.

Maselli, James M.: *See*—
Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,499,206, Cl. 502-304.000.

Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, to Mitsuboshi Belting Ltd. Drive belt with tensile cords. 4,498,891, Cl. 474-205.000.

Masler, William F., III; and Amjad, Zahid, to B. F. Goodrich Company, The. Scale inhibiting copolymer. 4,499,002, Cl. 252-180.000.

Mason, Charles E., to Conoco Inc. Pump down tool and check valve. 4,498,532, Cl. 166-70.000.

Mason, Walter R.; and Cummings, Jimmie L., to Hoge, Warren, Zimmerman Company. Apparatus for continuously producing a dry material and liquid slurry. 4,499,561, Cl. 366-156.000.
Massachusetts Institute of Technology: *See*—
Guiseppi-Elie, Anthony; and Wnek, Gary E., 4,499,007, Cl. 252-500.000.
Lynch, John T.; Anderson, Alfredo C.; Withers, Richard S.; and Wright, Peter V., 4,499,441, Cl. 333-161.000.
Massaro, Thomas A.: *See*—
Schneider, Philip H.; Weber, J. William; and Massaro, Thomas A., 4,498,843, Cl. 417-22.000.
Massey, Fred L.; and Callander, Douglas D., to Goodyear Tire & Rubber Company, The. High clarity colorless polyesters. 4,499,226, Cl. 524-382.000.
Massie, James E.: *See*—
Spain, Raymond G.; and Massie, James E., 4,499,216, Cl. 523-437.000.
Master Juvenile Products: *See*—
Arginsky, Richard C., 4,498,627, Cl. 239-279.000.
Mastikova, Margarita H.: *See*—
Galabov, Angel S.; and Mastikova, Margarita H., 4,499,093, Cl. 514-258.000.
Masuda, Koji, to Nissan Motor Company, Limited. High activity catalyst for reforming of methanol and process of preparing same. 4,499,205, Cl. 502-303.000.
Masuda, Teruo; Abe, Takeo; and Koike, Matsuhiro, to France Bed Co., Ltd. Mattress. 4,498,477, Cl. 128-378.000.
Masuda, Yoshinobu, to Ono Pharmaceutical Co., Ltd. Method of anoxia treatment using prostaglandin analogues. 4,499,085, Cl. 514-58.000.
Materna, Peter A., to United States of America, Energy. High-field double-pancake superconducting coils and a method of winding. 4,499,443, Cl. 335-216.000.
Mathew, Christina C. Interoral tube fixing device. 4,498,903, Cl. 604-174.000.
Matsuda, Toshiro, to Nissan Motor Company, Limited. Anti-skid brake control system with fail-safe arrangement. 4,499,543, Cl. 364-426.000.
Matsuda, Yoshio, to Yoshida Kogyo K. K. Warp-knit stringer tape for slide fasteners. 4,498,316, Cl. 66-196.000.
Matsufuji, Yohji; Togano, Shigeo; and Ichihashi, Hiroo, to Canon Kabushiki Kaisha. Ink jet recording apparatus. 4,499,478, Cl. 346-140.00R.
Matsui, Takeshi: *See*—
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, 4,498,331, Cl. 73-35.000.
Matsuo, Yasushi: *See*—
Shimamori, Toru; Hattori, Yoshinori; and Matsuo, Yasushi, 4,499,192, Cl. 501-97.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Hatagawa, Toyotsugu, 4,499,356, Cl. 219-10.55E.
Shinozaki, Nozomu; Dohi, Takashi; Yamazaki, Shinji; and Neki, Shigeo, 4,499,449, Cl. 338-32.00R.
Tanaka, Tsutomu; Tsujimoto, Yoshinobu; Serizawa, Hiroyuki; and Hattori, Katsuji, 4,498,730, Cl. 350-96.160.
Ueda, Katsuroh, 4,498,453, Cl. 126-21.00A.
Matsushita Electric Works, Ltd.: *See*—
Okamoto, Futoshi, 4,499,533, Cl. 363-126.000.
Mattel, Inc.: *See*—
Cook, John S., 4,498,887, Cl. 446-462.000.
Matthews, Gordon H. Method and apparatus for automatically detecting and playing desired audio segments over a broadcast receiver. 4,499,601, Cl. 455-166.000.
Matthiessen, Hans, to Dragerwerk Aktiengesellschaft. Circuit arrangement for correction of a sensor output. 4,499,423, Cl. 324-425.000.
Mattis, Donald J., to Sun Chemical Corporation. Connector receptacle for electric cigar lighter. 4,498,726, Cl. 339-182.00R.
Mattisson, Ulf K.: *See*—
Shaldon, Stanley; Christopherson, Kjell H. I.; Falkvall, Thore E.; and Mattisson, Ulf K., 4,498,990, Cl. 210-637.000.
Maus, Helmut, to Holac Maschinenbau GmbH. Apparatus for cutting foodstuffs. 4,498,380, Cl. 100-98.00R.
Max Factor & Co.: *See*—
Seidler, David, 4,498,490, Cl. 132-88.500.
Mayor, Robert B., to Boeing Company, The. Adaptor for clamping optical scale on tooling button. 4,498,245, Cl. 33-286.000.
Mazda Motor Corporation: *See*—
Kiba, Hiroshi; Itoh, Yoshimasa; and Kiryu, Kiyuji, 4,498,414, Cl. 118-663.000.
Satow, Haruhiko; Okimoto, Haruo; Sakurai, Shigeru; and Oda, Hiroyuki, 4,498,429, Cl. 123-26.000.
Mazin, Moshe; and Engeler, William E., to General Electric Company. Five-transistor static memory cell implemental in CMOS/bulk. 4,499,558, Cl. 365-182.000.
McAllister, John E., Jr., to United States of America, Energy. Vortex-augmented cooling tower-windmill combination. 4,499,034, Cl. 261-109.000.
McBride, Edward D.: *See*—
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,498,871, Cl. 440-61.000.
McCafferty, Gerald P.; Navoczynski, Stanley J.; and Kinkle, Robert W., to Budd Company, The. Adhesively bonded trailer including fiber reinforced panels. 4,498,264, Cl. 52-281.000.
McCallum, Neville C. Racetracks. 4,498,666, Cl. 272-5.000.
McCarthy, Jeremiah P.: *See*—
Goldman, Ernest A.; McCarthy, Jeremiah P.; and Poppert, Paul E., 4,498,223, Cl. 29-571.000.
McColl, James R.; and Peters, Thomas E., to GTE Laboratories Incorporated. Infrared emitting phosphor. 4,499,005, Cl. 252-301.60S.
McDaniel, Kenneth G., to Texaco Inc. Preparation of amino polyols. 4,499,264, Cl. 536-50.000.
McDaniel, Max P., to Phillips Petroleum Company. $TiCl_4$ Treated with organomagnesium/protonating agent. 4,499,199, Cl. 502-104.000.
McDermott Incorporated: *See*—
Fern, Derek T.; and Harrison, Gary E., 4,498,811, Cl. 405-168.000.
McDonald, Giles N.: *See*—
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McDonnel Douglas Corporation: *See*—
Boehringer, Wilfred E.; and Pastor, Vincent J., 4,498,647, Cl. 244-75.00R.
McEntire, Edward E.: *See*—
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McGeehon, William C.: *See*—
Mihalakis, Agis I., deceased; and Friend, Barbara L., legal representative, 4,498,734, Cl. 350-125.000.
McGlone, William E.; and Genest, Leonard J. Portable, positionable, locking magnetic molding tubes for vehicle protection. 4,498,697, Cl. 293-128.000.
McGovern, William E.; and Tsao, Kuey Y., to Teletype Corporation. Apparatus for measuring light. 4,498,767, Cl. 356-121.000.
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Dyer, Lawrence D.; and McGregor, Anderson D., 4,498,345, Cl. 73-849.000.
McIntyre, Ernest L.: *See*—
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McNeilab, Inc.: *See*—
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Maryanoff, Cynthia A., 4,499,294, Cl. 549-519.000.
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Christenson, Ronald E., 4,498,568, Cl. 193-10.000.
McNulty, Sherry M.: *See*—
Scott, Raymond G.; and McNulty, Sherry M., 4,498,589, Cl. 206-526.000.
McSweeney, Robert T.; and Long, Stanley A., to North American Philips Corporation. Low-fire ceramic dielectric compositions for multilayer ceramic capacitors. 4,499,521, Cl. 361-321.000.
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Scott, Burton W., 4,499,358, Cl. 219-10.770.
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Gergo, Gyorgy; Nemeth, Jozsef; Sebestyen, Bela; and Solymossy, Bela, 4,498,391, Cl. 102-312.000.
Mednikarov, Borislav D.: *See*—
Konstantinov, Ivan T.; Mednikarov, Borislav D.; Sahatchieva, Maria A.; and Burov, Atanas T., 4,499,173, Cl. 430-278.000.
Medtronic, Inc.: *See*—
Bourgeois, Ivan M., 4,498,478, Cl. 128-419.0PG.
Williams, Terrell M., 4,498,482, Cl. 128-786.000.
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Meiners, Hans-Joachim: *See*—
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.
Meislitzer, Karl H.; and Hauner, Wigbert, to Dentsply Research & Development Corp. Sagger furnace. 4,498,866, Cl. 432-239.000.
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Prioux, Jean-Jacques; Meleard, Roger; Pioger, Michel; and Lasvaladas, Jean-Jacques, 4,499,343, Cl. 200-5.00A.
Melillo, David G.; and Ryan, Kenneth M., to Merck & Co., Inc. Trans-3-carboxymethylene-4-carboxy-5-methyl-delta2-isoxazoline as intermediate. 4,499,278, Cl. 548-240.000.
Melles, Harold W.: *See*—
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Melquist, John L., to Standard Oil Company (Indiana). Selective low-temperature isomerization of normal butenes using AMS-1B crystalline borosilicate molecular sieve. 4,499,326, Cl. 585-671.000.
Mendenhall, Mark D.: *See*—
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Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,498,476, Cl. 128-346.000.

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Mercil, Robert A. Moisture absorbent condiment container. 4,498,608, Cl. 222-190.000.
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de Solms, S. Jane, 4,499,103, Cl. 514-365.000.
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Shiraki, Manabu; Nakajima, Akihiro; and Miyazawa, Takashi, 4,499,420, Cl. 324-174.000.
Nakajima, Hisao: *See*—
Inui, Toshiharu; Kurata, Masami; Nakajima, Hisao; and Ohmori, Takashi, 4,499,476, Cl. 346-76.0PH.
Nakajima Seisakusho Co., Ltd.: *See*—
Kojima, Katsuhiko; Tanaka, Toyomi; and Nakajima, Shigeo, 4,498,509, Cl. 141-10.000.
Nakajima, Shigeo: *See*—
Kojima, Katsuhiko; Tanaka, Toyomi; and Nakajima, Shigeo, 4,498,509, Cl. 141-10.000.
Nakajima, Tetsuo: *See*—
Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, 4,498,440, Cl. 123-438.000.
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, to Nippondenso Co., Ltd. Knocking detecting apparatus for internal combustion engines. 4,498,331, Cl. 73-35.000.
Nakamura, Kazuharu; and Nakanishi, Yutaka, to Toyotomi Kogyo Co., Ltd. Device for adjusting the vertical position of wick in oil burner. 4,498,862, Cl. 431-88.000.
Nakamura, Kenzi, to Sanyo Electric Co., Ltd. Flyback transformer. 4,499,522, Cl. 361-331.000.
Nakamura, Masao: *See*—
Ishizuka, Takashi; Moriyama, Yasuhiro; and Nakamura, Masao, 4,499,042, Cl. 264-205.000.
Nakamura, Mitsuo: *See*—
Ohgami, Masaaki; and Nakamura, Mitsuo, 4,498,441, Cl. 123-440.000.
Nakamura, Norihiko; and Baika, Toyokazu, to Toyota Jidosha Kabushiki Kaisha. Variable valve-timing apparatus in an internal-combustion engine. 4,498,431, Cl. 123-90.150.
Nakamura, Shyuzo: *See*—
Sato, Hiroshi; Ishii, Norio; and Nakamura, Shyuzo, 4,499,321, Cl. 585-486.000.
Nakamura, Yukio; and Tanaka, Tsuneo, to Ube Industries Ltd. Anticorrosive covering sheet. 4,499,136, Cl. 428-206.000.
Nakanishi Metal Works Co., Ltd.: *See*—
Wakabayashi, Takao, 4,498,399, Cl. 104-96.000.
Nakanishi, Yutaka: *See*—
Nakamura, Kazuharu; and Nakanishi, Yutaka, 4,498,862, Cl. 431-88.000.
Nakano, Kazumi, to Nippon Electric Co., Ltd. Mail-article tracing apparatus. 4,499,372, Cl. 250-223.00R.
Nakanome, Takemi: *See*—
Imaki, Naoshi; and Nakanome, Takemi, 4,499,306, Cl. 568-348.000.
Nakaoki, Tokuzo, to Mitutoyo Mfg. Co., Ltd. Height gauge. 4,498,241, Cl. 33-172.00R.
Nakayama, Kenichiro: *See*—
Takahashi, Izumi; Nakayama, Kenichiro; Sugiyama, Terumasa; and Suzuki, Takanobu, 4,499,580, Cl. 371-17.000.
Nakayama, Kiyoshi, to Murakami Kaimeido Co., Ltd. Multi-position electric switch. 4,499,342, Cl. 200-5.00E.
Nakayama, Yutaka: *See*—
Yamada, Tetsuyo; and Nakayama, Yutaka, 4,498,968, Cl. 204-412.000.
Namiki, Junji, to NEC Corporation. Space diversity system. 4,498,885, Cl. 455-273.000.
Nara, Yasuaki: *See*—
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,498,307, Cl. 62-148.000.
Narita, Kou: *See*—
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, 4,498,331, Cl. 73-35.000.
Naruo, Kyoichi: *See*—
Yabe, Masao; Naruo, Kyoichi; and Ono, Kazuhiro, 4,499,043, Cl. 264-207.000.
Nash Engineering Company, The: *See*—
Bissell, Douglas E.; and Jozepaitis, Charles M., 4,498,844, Cl. 417-68.000.
National Distillers and Chemical Corporation: *See*—
Barlow, Anthony; Schlossman, Irwin S.; and Borgerding, Robert E., 4,499,013, Cl. 252-567.000.
Harris, Eugene G., 4,499,288, Cl. 549-266.000.
Murib, Jawad H., 4,499,301, Cl. 562-546.000.
Scheben, John A.; and Hinnenkamp, James A., 4,499,298, Cl. 560-241.000.
National Laboratory for High Energy Physics: *See*—
Hosoyama, Kenji; and Hirabayashi, Hiromi, 4,498,313, Cl. 62-514.00R.
National Semiconductor Corporation: *See*—
Gross, William H.; and Sakurai, Tadashi, 4,499,432, Cl. 330-296.000.
National Starch and Chemical Corporation: *See*—
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., 4,499,116, Cl. 426-582.000.
Natsuaki, Nobuyoshi: *See*—
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.
Navoczynski, Stanley J.: *See*—
McCafferty, Gerald P.; Navoczynski, Stanley J.; and Kinkle, Robert W., 4,498,264, Cl. 52-281.000.
Naya, Eizo: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.
Naylor, Carter G.: *See*—
Dominguez, Richard J. G.; McEntire, Edward E.; and Naylor, Carter G., 4,499,254, Cl. 528-49.000.
Nealon, James T.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
NEC Corporation: *See*—
Fujii, Akira, 4,499,430, Cl. 330-279.000.
Kamo, Yuichi; Mikami, Nobuo; Wakamatsu, Kazutoshi; and Naito, Kunio, 4,499,442, Cl. 335-79.000.
Namiki, Junji, 4,498,885, Cl. 455-273.000.
Neckers, Douglas C., to Bowling Green State University. Photopolymerizable composition containing perester photoinitiator and photopolymerization process. 4,498,963, Cl. 204-159.190.
Negoro, Ikuo: *See*—
Ogawa, Ryota; and Negoro, Ikuo, 4,498,759, Cl. 355-8.000.
Neki, Shigeo: *See*—
Shinozaki, Nozomu; Dohi, Takashi; Yamazaki, Shinji; and Neki, Shigeo, 4,499,449, Cl. 338-32.00R.
Nelen, Petrus R., to Agfa-Gevaert N.V. Apparatus for transferring xerographic images. 4,498,758, Cl. 355-3.0TR.
Nelson, H. Wharton, to Combustion Engineering, Inc. Control of active alkali in black liquor. 4,498,955, Cl. 162-30.110.

Nelson, Jeffrey A.; and Hanstine, Kenneth W., to Fuller Company. Division head for grinding mill. 4,498,634, Cl. 241-72.000.
Nelson, Terry L.; and Reichman, James M., to Electric Power Research Institute, Inc. Underground cable installing apparatus and method utilizing a fluid jet assisted, vibrating blade arrangement. 4,498,813, Cl. 405-182.000.
Nelson, William; and Bearpark, John P., to BICC Public Limited Company. Electrolytic refining of metal. 4,498,522, Cl. 164-460.000.
Nemeth, Jozsef: *See—*
Gergo, Gyorgy; Nemeth, Jozsef; Sebestyen, Bela; and Solymossy, Bela, 4,498,391, Cl. 102-312.000.
Neri, Guido: *See—*
Moro, Luigi; Maffione, Grazia; Neri, Guido; and Rigamonti, Alessandro, 4,499,066, Cl. 424-19.000.
Neuray, Dieter: *See—*
Tacke, Peter; Korber, Helmut; Merten, Josef; and Neuray, Dieter, 4,499,237, Cl. 525-67.000.
Nevamar Corporation: *See—*
O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., 4,499,137, Cl. 428-211.000.
Newbury, Arthur D., to Contrawl Limited. Stackable container for use in a containerization system. 4,498,584, Cl. 206-510.000.
NGK Spark Plug Co., Ltd.: *See—*
Shimamori, Toru; Hattori, Yoshinori; and Matsuo, Yasushi, 4,499,192, Cl. 501-97.000.
Yamada, Tetsusyo; and Nakayama, Yutaka, 4,498,968, Cl. 204-412.000.
Nguyen, Tuan A.: *See—*
Miazga, Dennis E.; Nguyen, Tuan A.; and Dugan, Michael T., 4,499,581, Cl. 371-20.000.
Nicodemus, Joachim: *See—*
Fischer, Klaus; Kroschel, Heinz; Nicodemus, Joachim; and Petters, Willi, 4,498,393, Cl. 102-393.000.
Nicolas, Jean-Pierre, to Etablissements Augier. Modulation installation for sector supply of charge elements. 4,499,452, Cl. 340-310.00A.
Niida, Taro: *See—*
Minowa, Nobuto; Fukatsu, Shunzo; Tachibana, Kunitaka; Niida, Taro; and Mase, Sadaaki, 4,499,027, Cl. 260-502.50G.
Nippon Electric Co., Ltd.: *See—*
Iinuma, Kazumoto, 4,499,498, Cl. 358-261.000.
Nakano, Kazumi, 4,499,372, Cl. 250-223.00R.
Nippon Kogaku K.K.: *See—*
Goto, Tetsuro, 4,498,751, Cl. 354-289.100.
Uehara, Makoto, 4,498,742, Cl. 350-523.000.
Uehara, Makoto; and Anzai, Satoru, 4,498,762, Cl. 355-55.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Akita, Shinji; and Tanaka, Megumu, 4,498,324, Cl. 72-208.000.
Hasebe, Nobuhisa; Kawada, Hiroshi; and Komine, Isamu, 4,498,518, Cl. 164-416.000.
Yoshihara, Tetsuya, 4,498,611, Cl. 222-599.000.
Nippon Paint Co., Ltd.: *See—*
Yamamori, Naoki; Yokoi, Junji; and Yoshikawa, Motoyoshi, 4,499,223, Cl. 524-176.000.
Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi; and Suzuki, Yukio, 4,498,853, Cl. 418-268.000.
Nippon Rotary Nozzle Co., Ltd.: *See—*
Yoshihara, Tetsuya, 4,498,611, Cl. 222-599.000.
Nippon Soken, Inc.: *See—*
Tanaka, Hiroaki; and Akita, Shigeyuki, 4,499,465, Cl. 340-870.370.
Yoshida, Hitoshi; Atsumi, Morihiro; Ito, Nobuei; and Atsumi, Kinya, 4,499,366, Cl. 219-270.000.
Nippon Steel Chemical Co., Ltd.: *See—*
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.
Nippondenso Co., Ltd.: *See—*
Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, 4,498,989, Cl. 210-450.000.
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, 4,498,331, Cl. 73-35.000.
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.
Suzuki, Yasutoshi; Hara, Kunihiko; and Sato, Ryo, 4,499,451, Cl. 340-98.000.
Yoshida, Hitoshi; Atsumi, Morihiro; Ito, Nobuei; and Atsumi, Kinya, 4,499,366, Cl. 219-270.000.
Nishihara, Tadao, to Iseki & Co., Ltd. Front power take-off for tractors. 4,498,349, Cl. 74-5.200.
Nishimura, Akimasa: *See—*
Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, 4,499,487, Cl. 358-41.000.
Nishimura, Dwight G., to Leland Stanford Junior University, The Board of Trustees of the. Multiple measurement noise reducing system using artifact edge identification and selective signal processing. 4,499,493, Cl. 358-111.000.
Nishimura, Tomoaki: *See—*
Hamajima, Shigemitsu; Nishimura, Tomoaki; Sakakibara, Naoji; and Kawata, Shoji, 4,499,542, Cl. 364-424.100.
Nishio, Shigeru, to Aisin Seiki Kabushiki Kaisha. Air control for a lumbar support device. 4,498,494, Cl. 137-514.000.
Nishiuchi, Toshio, to Dai-Ichi Seiko Co., Ltd. Zero-reset type counter. 4,499,370, Cl. 235-144.0HC.
Nishizaki, Ken: *See—*
Kubo, Akira; Ishii, Akihiko; Nishizaki, Ken; and Saito, Tomoharu, 4,499,225, Cl. 524-276.000.
Nissan Chemical Industries, Ltd.: *See—*
Ozawa, Kiyomi; and Ishii, Shigeru, 4,499,275, Cl. 546-298.000.
Nissan Motor Company, Limited: *See—*
Hara, Seinosuke; Aoyama, Shunichi; and Miisho, Kazuyuki, 4,498,432, Cl. 123-90.160.
Horiuchi, Tomofusa, 4,498,436, Cl. 123-339.000.
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,499,340, Cl. 179-115.5DV.
Masuda, Koji, 4,499,205, Cl. 502-303.000.
Matsuda, Toshiro, 4,499,543, Cl. 364-426.000.
Ogawa, Naoki, 4,498,433, Cl. 123-90.380.
Nissan Shatai Company, Limited: *See—*
Kobayashi, Shinma; and Ohsawa, Eiji, 4,498,309, Cl. 62-186.000.
Nissen Chemical Industries Co., Ltd.: *See—*
Maemoto, Kenichi; and Jinno, Katsushi, 4,499,040, Cl. 264-167.000.
Nitto Electric Industrial Co., Ltd.: *See—*
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; and Tanaka, Munekazu, 4,499,252, Cl. 528-38.000.
Ishizuka, Takashi; Moriyama, Yasuhiro; and Nakamura, Masao, 4,499,042, Cl. 264-205.000.
Nitto Kohki Co., Ltd.: *See—*
Mikiya, Toshio, 4,498,658, Cl. 251-149.600.
NL Industries, Inc.: *See—*
Tetenbaum, Marvin T.; and Crowley, Burlon C., 4,499,233, Cl. 524-591.000.
Nohara, Isao: *See—*
Yamamoto, Shigeru; Miyake, Yuzuru; and Nohara, Isao, 4,498,637, Cl. 242-18.100.
Nokami, Junzo: *See—*
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.
Nomura, Kenji; Yamakage, Tetsuro; and Noro, Katsuyoshi, to Toyoda Koki Kabushiki Kaisha. Pallet changer. 4,498,571, Cl. 198-339.000.
Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Mixture control apparatus for carburetor. 4,498,440, Cl. 123-438.000.
Norbeck, Dean K.: *See—*
Schnetzka, Harold R.; Wills, Frank E.; and Norbeck, Dean K., 4,499,534, Cl. 363-129.000.
Nordson Corporation: *See—*
Tank, Gene F.; Dawson, Samuel O.; and Barnett, Phillip R., 4,498,913, Cl. 55-356.000.
Nordstrom, Kurt: *See—*
Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, 4,499,189, Cl. 435-253.000.
Noro, Katsuyoshi: *See—*
Nomura, Kenji; Yamakage, Tetsuro; and Noro, Katsuyoshi, 4,498,571, Cl. 198-339.000.
Norrie, Lyle W.; Snider, Robert W.; and Simonsen, Knud, to Knud Simonsen Industries Limited. Vacuum container for meat products. 4,498,378, Cl. 99-472.000.
North American Philips Corporation: *See—*
McSweeney, Robert T.; and Long, Stanley A., 4,499,521, Cl. 361-321.000.
Shioleno, Lewis J., 4,499,524, Cl. 361-404.000.
North American Philips Electric Corp.: *See—*
Getz, Edward J.; and Lombardi, Gerald T., 4,498,580, Cl. 206-418.000.
Northern Telecom, Ltd.: *See—*
Wetzel, David L., 4,499,338, Cl. 179-99.00E.
Norton Christensen, Inc.: *See—*
Jurgens, Rainer, 4,498,549, Cl. 175-329.000.
Novon, Inc.: *See—*
Hutchin, Richard A., 4,499,492, Cl. 358-107.000.
Novotny, Rudolf: *See—*
Christophliemk, Peter; Novotny, Rudolf; von Laufenberg, Jurgen; and Sadlowsky, Josef, 4,499,062, Cl. 423-332.000.
Novus Inc.: *See—*
Petersen, Paul S., 4,498,940, Cl. 156-98.000.
Nowak, Frank J., to Owens-Illinois, Inc. Apparatus and method for uniformly winding elongate sheet materials. 4,498,640, Cl. 242-67.10R.
NSK-Warner K.K.: *See—*
Ono, Katsuyasu; and Sato, Tomosaburo, 4,498,222, Cl. 29-509.000.
Ono, Katsuyasu, 4,498,643, Cl. 242-107.40D.
Nunn, Robert H.: *See—*
Bloomer, James W., II; and Nunn, Robert H., 4,498,329, Cl. 73-9.000.
Nuvatec, Inc.: *See—*
Slavik, William H., 4,499,385, Cl. 307-10.00R.
N.V. Raychem S.A.: *See—*
Moisson, Marc; Van Noten, Lodewijk; Overbergh, Noel; Franckx, Joris; and Buekers, Valere, 4,498,938, Cl. 156-49.000.
Nyegaard & Co A/S: *See—*
Laerum, Ole D., 4,499,081, Cl. 514-17.000.
Obama, Kenjiro: *See—*
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,499,247, Cl. 526-142.000.
Obara, Haruki, to Fanuc Ltd. Shape compensating method for wire-out electric discharge machining. 4,499,359, Cl. 219-69.00W.

Obsomer, Marc, to Solvay & Cie (Societe Anonyme). Process for the production of tubes of a molecularly oriented plastic. 4,499,045, Cl. 264-532.000.
Occidental Chemical Corporation: *See*—
Davison, John B.; Jasinski, Raymond J.; and Peerce-Landers, Pamela J., 4,499,025, Cl. 260-465.00R.
Fifolt, Michael J., 4,499,024, Cl. 260-453.00R.
Lazarz, Christine A.; and Cook, Edward H., Jr., 4,498,961, Cl. 204-98.000.
O'Connor, Michael: *See*—
Bottolfson, Gary, 4,498,211, Cl. 15-203.000.
Oda, Hiroyuki: *See*—
Satow, Haruhiko; Okimoto, Haruo; Sakurai, Shigeru; and Oda, Hiroyuki, 4,498,429, Cl. 123-26.000.
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, to Agency of Industrial Science and Technology. Anode for the electrolysis of water. 4,498,962, Cl. 204-129.000.
Ode, Bengt: *See*—
Borrman, Bo; and Ode, Bengt, 4,499,047, Cl. 376-434.000.
O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., to Nevamar Corporation. Scuff-resistant laminates. 4,499,137, Cl. 428-211.000.
Oden, Laurance L.; and Dunning, John S., to United States of America, Interior. Ductile duplex iron-based alloy containing aluminum. 4,498,928, Cl. 75-124.000.
Odom, Robert E., to Bemis Company, Inc. Case erector and bottom sealer apparatus. 4,498,893, Cl. 493-12.000.
O'Donnell, Harry B., III: *See*—
Ahoor, Rooin, 4,498,351, Cl. 74-439.000.
Oetiker, Hans; and Kummer, Emanuel, to Gebruder Buhler AG. Process for continuously determining the moisture content of spoilable grain products. 4,499,111, Cl. 426-231.000.
Ofusa, Masaatsu, to Yoshida Kogyo K. K. Method and apparatus for manufacturing woven slide fastener stringers. 4,498,503, Cl. 139-116.000.
Ogawa, Masaki; Hirata, Yasushi; and Tsuchikura, Akira, to Bridgestone Tire Company Limited. Rubber compositions having improved crack growth resistance. 4,499,228, Cl. 524-413.000.
Ogawa, Naoki, to Nissan Motor Company, Limited. Member such as an engine cover adjacent to an automotive engine. 4,498,433, Cl. 123-90.380.
Ogawa, Ryota; and Negoro, Ikuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Continuous variable magnification-type copying machine capable of enlarging and contracting an image. 4,498,759, Cl. 355-8.000.
Ohara, Ikuo: *See*—
Ohashi, Hiroyuki; Ohara, Ikuo; and Takami, Toru, 4,499,076, Cl. 424-143.000.
Ohara, Tsunemasa: *See*—
Suzuki, Masayuki; Yamamichi, Masayoshi; and Ohara, Tsunemasa, 4,498,750, Cl. 354-154.000.
Ohashi, Hiroyuki; Ohara, Ikuo; and Takami, Toru, to Ajinomoto Company Incorporated. Elemental diets for liver diseases. 4,499,076, Cl. 424-143.000.
Ohashi, Mitunari: *See*—
Tanaka, Nobuyasu; Ohashi, Mitunari; and Iwamoto, Shohzoh, 4,498,569, Cl. 193-27.000.
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, to Nippondenso Co., Ltd. Electronic ignition control apparatus. 4,499,544, Cl. 364-431.040.
Ohgami, Masaaki; and Nakamura, Mitsuo, to Fuji Jukogyo Kabushiki Kaisha. Air-fuel ratio control system. 4,498,441, Cl. 123-440.000.
Ohkoshi, Masayoshi; and Suzuno, Yoshiro, to Diesel Kiki Company, Ltd. Centrifugal governor for internal combustion engine. 4,498,437, Cl. 123-373.000.
Ohkubo, Masaharu; Hayashi, Nobuhiro; and Aoki, Tomohiro, to Canon Kabushiki Kaisha. Developing device for use in electrophotography. 4,498,755, Cl. 355-3.0DD.
Ohkura, Makoto: *See*—
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.
Ohmori, Takashi: *See*—
Inui, Toshiharu; Kurata, Masami; Nakajima, Hisao; and Ohmori, Takashi, 4,499,476, Cl. 346-76.0PH.
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, to Ricoh Company, Ltd. Single lens reflex camera. 4,498,754, Cl. 354-479.000.
Ohsawa, Eiji: *See*—
Kobayashi, Shinma; and Ohsawa, Eiji, 4,498,309, Cl. 62-186.000.
Ohshima, Ken: *See*—
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.
Ohsima, Ken: *See*—
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.
Oka, Takahiro: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,499,247, Cl. 526-142.000.
Okada, Sadashige. Modified asphalt-epoxy resin composition. 4,499,215, Cl. 523-450.000.
Okado, Chihiro: *See*—
Izume, Takatomo; and Okado, Chihiro, 4,499,363, Cl. 219-130.210.
Okami, Yoshiro: *See*—
Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,499,083, Cl. 514-36.000.
Okamoto, Futoshi, to Matsushita Electric Works, Ltd. Power supply apparatus. 4,499,533, Cl. 363-126.000.
Okamoto, Shinzi: *See*—
Tanino, Katsumi; Fujiki, Satoshi; and Okamoto, Shinzi, 4,499,010, Cl. 252-512.000.
Okamoto, Yoshikazu, to Rank Xerox, Ltd. Method of developing an electrostatic latent image uses magnetic developer. 4,499,166, Cl. 430-33.000.
Okamura, Diane H. Fingernail jewelry device. 4,498,314, Cl. 63-2.000.
Okayama, Masao: *See*—
Yoshida, Masashi; Katohno, Noboru; Yokota, Hajime; and Okayama, Masao, 4,499,512, Cl. 360-90.000.
Okimoto, Haruo: *See*—
Satow, Haruhiko; Okimoto, Haruo; Sakurai, Shigeru; and Oda, Hiroyuki, 4,498,429, Cl. 123-26.000.
Okumura, Mitsuhiro: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.
Okumura, Yoshiharu; Kamiyama, Setsuo; Hosokawa, Toshihiro; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for hydration of olefins. 4,499,313, Cl. 568-897.000.
Olin Corporation: *See*—
Pilpel, Edward; and Meatto, Franklin, 4,498,686, Cl. 280-610.000.
Weinstein, Paul; and Kelmachter, Barry L., 4,498,917, Cl. 65-2.000.
Wojtowicz, John A., 4,498,921, Cl. 71-67.000.
Oliver, Everett O.: *See*—
Hiestand, Wilfred; and Oliver, Everett O., 4,498,512, Cl. 144-2.00R.
Olympus Optical Co., Ltd.: *See*—
Banno, Taiichi; Hijikata, Kazuo; and Takekawa, Hiroshi, 4,498,780, Cl. 356-414.000.
Mizokami, Kazunori, 4,498,753, Cl. 354-425.000.
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.
Omichi, Hitoshi: *See*—
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, 4,499,484, Cl. 357-68.000.
Omori, Mitsugu: *See*—
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.
Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, to Kuraray Co., Ltd. Adhesive compositions. 4,499,251, Cl. 526-278.000.
Onda, Kenichi; Abe, Kojin; Yabuno, Kohei; and Uemura, Takeshi, to Hitachi, Ltd. Switching power supply apparatus. 4,499,530, Cl. 363-17.000.
Onda, Tsutomu; Kano, Keiichi; and Itakura, Shinji, to Aisin Seiki Kabushiki Kaisha. Plating apparatus. 4,498,965, Cl. 204-228.000.
Ono, Katsuyasu; and Sato, Tomosaburo, to NSK-Warner K.K. Clinching process of buckle base and wire rope. 4,498,222, Cl. 29-509.000.
Ono, Katsuyasu, to NSK-Warner K.K. Automatic locking retractor. 4,498,643, Cl. 242-107.40D.
Ono, Kazuhiro: *See*—
Yabe, Masao; Naruo, Kyoichi; and Ono, Kazuhiro, 4,499,043, Cl. 264-207.000.
Ono Pharmaceutical Co., Ltd.: *See*—
Masuda, Yoshinobu, 4,499,085, Cl. 514-58.000.
Onuma, Tatsuro: *See*—
Tanaka, Toshiaki; Fukai, Masao; Onuma, Tatsuro; and Kinoshita, Ryohei, 4,498,256, Cl. 40-475.000.
Onuma, Tsutomu; and Hataya, Fumio, to Hitachi, Ltd. Welded structural member having high erosion resistance. 4,499,158, Cl. 428-682.000.
Ooka, Naoto: *See*—
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.
OPUS, Inc.: *See*—
Gainsboro, Leon; and Latham, Peter A., 4,498,423, Cl. 119-51.00R.
Orii, Masaru, to Kabushiki Kaisha Orii Judoki Seisakusho. Reversing apparatus. 4,498,840, Cl. 414-759.000.
Oroskar, Anil R., to UOP Inc. Serial flow continuous separation process. 4,498,991, Cl. 210-659.000.
Ortho Diagnostic Systems Inc.: *See*—
Sujansky, Daniel J.; and Rancourt, Martha W., 4,499,183, Cl. 435-6.000.
Orum Sogns Mejeri APS: *See*—
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.
Orvik, Jon A.: *See*—
Malhotra, Sudarhshan K.; and Orvik, Jon A., 4,499,277, Cl. 546-346.000.
Malhotra, Sudarshan K.; and Orvik, Jon A., 4,499,276, Cl. 546-346.000.
Osgerby, Ian. Carbon dioxide power cycle. 4,498,289, Cl. 60-39.520.
Ota, Hideo; and Yamashita, Kiyotoshi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light-sensitive material. 4,499,179, Cl. 430-523.000.

Otala, Matti N., to Shin-Shirasuna Electric Corp. Driver circuit configuration for the output stage of electronic power amplifiers. 4,499,431, Cl. 330-296.000.

Otouma, Hiroshi: *See*—
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,498,962, Cl. 204-129.000.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See*—
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.

Otteblad, Sven I.; and Dovertie, Ralph G., to Aquastat AB. Lifting body for diving. 4,498,408, Cl. 114-52.000.

Oulsnam, Bryon T. Roof bolts for mines and the like workings. 4,498,817, Cl. 405-260.000.

Outboard Marine Corporation: *See*—
Baltz, Gene F.; Clark, Amos M.; Hartke, David J.; and Jourdan, Donovan K., 4,498,434, Cl. 123-187.50R.
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,498,871, Cl. 440-61.000.

Overbergh, Noel: *See*—
Moisson, Marc; Van Noten, Lodewijk; Overbergh, Noel; Franckx, Joris; and Buekers, Valere, 4,498,938, Cl. 156-49.000.

Overley, John R.: *See*—
Scaccia, Carlo; and Overley, John R., 4,499,029, Cl. 260-544.00A.

Owens-Corning Fiberglas Corporation: *See*—
Braziel, Jeffrey B., 4,498,221, Cl. 29-283.500.

Owens-Illinois, Inc.: *See*—
Nowak, Frank J., 4,498,640, Cl. 242-67.10R.

Oxel, Berton R., to Hoover Company, The. Carpet cleaning apparatus with auxiliary cleaning device arrangement. 4,498,214, Cl. 15-320.000.

Oya, Masayuki; and Iso, Tadashi, to Santen Pharmaceutical Co., Ltd. Thiazolidine and pyrrolidine compounds and pharmaceutical compositions containing them. 4,499,102, Cl. 514-365.000.

Ozawa, Kiyomi; and Ishii, Shigeru, to Nissan Chemical Industries, Ltd. Phenoxypicolinic aldehydes. 4,499,275, Cl. 546-298.000.

Ozeki, Mineo: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,499,541, Cl. 364-424.000.

Pabst, Manfred, to A. Monforts GmbH & Co. Method and device for controlling a continuous heat treatment of a textile fabric web. 4,498,248, Cl. 34-89.000.

Pacer Technology and Resources, Inc.: *See*—
Stock, Hugh J., 4,498,609, Cl. 222-420.000.

Packard, Alden H.: *See*—
Purdy, Richard T.; and Packard, Alden H., 4,499,516, Cl. 360-128.000.

Paisley, Gary V.; Altschuler, J. George; and Rommler, Josef, to Coca-Cola Company, The. Composition for making a plastic closure for liquid product containers. 4,499,141, Cl. 428-318.800.

Pall Corporation: *See*—
Worwood, Bryan H.; and Stallard, Paul, 4,498,495, Cl. 137-557.000.

Pamer, Walter R.; Zils, James A.; and Capuano, Terry D., to Russell, Burdsall & Ward Corporation. Load indicating flange. 4,498,825, Cl. 411-11.000.

Panduit Corp.: *See*—
Moody, Roy A.; Bulanda, John J.; Levin, Robert F.; Timian, Steven S.; and Waltasti, Stephen A., 4,498,506, Cl. 140-93.200.

Panneman, Harm J., to Akzo N.V. Carboxyimidamide derivatives. 4,499,105, Cl. 514-631.000.

Panush, Sol, to Inmont Corporation. Multilayer automative paint system. 4,499,143, Cl. 428-336.000.

Paparizos, Christos; Shout, Robert S.; and Shaw, Wilfrid G., to Standard Oil Company, The. Catalytic reaction of acrolein and methacrolein with alcohols and glycols. 4,499,308, Cl. 568-465.000.

Papoojian, Philip M.: *See*—
Ward, Irl E.; and Papoojian, Philip M., 4,499,231, Cl. 524-506.000.

Pardo, Warren A., to Duckett, Robert C., a part interest. Pressure cooker lid latch and lock. 4,498,695, Cl. 292-260.000.

Pareja, Ramon, to Lear Siegler, Inc. Pump with ring retained floating wrist pins and connecting rods. 4,498,372, Cl. 92-187.000.

Parker Chemical Company: *See*—
Kent, Gary D.; Intorp, Norbert B.; and Springstead, Thomas H., 4,498,935, Cl. 148-6.15Z.

Parker, Hugh M. Tubeless tire bead seater and method of employing the same. 4,498,516, Cl. 157-1.100.

Parker, John A.: *See*—
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,499,260, Cl. 528-229.000.

Parker, Norman W., to Motorola, Inc. Baseband discriminator for frequency or transform modulation. 4,499,426, Cl. 329-50.000.

Parker, Ray A., Jr., to Phillips Petroleum Company. Method for the recovery of thermoplastic from piping for reprocessing. 4,499,037, Cl. 264-37.000.

Parsons, Anthony W.: *See*—
Maathuis, Antonnis G.; and Parsons, Anthony W., 4,498,514, Cl. 152-356.00R.

Parthasarathy, Shakkottai P., to United States of America, National Aeronautics and Space Administration. Carbon granule probe microphone for leak detection. 4,498,333, Cl. 73-40.50A.

Partis, Richard A.: *See*—
Mueller, Richard A.; and Partis, Richard A., 4,499,295, Cl. 560-53.000.

Partridge, Randall D.: *See*—
Degnan, Thomas F.; and Partridge, Randall D., 4,498,976, Cl. 208-120.000.

Pasetti, Adolfo: *See*—
Piacenti, Franco; Ciampelli, Federigo; and Pasetti, Adolfo, 4,499,146, Cl. 428-422.000.

Pasternak, Dov: *See*—
Korin, Eliyaho; Rappaport, Elazar; Pasternak, Dov; Roy, Aharon S.; and Wolf, David, 4,498,459, Cl. 126-430.000.

Pastor, Vincent J.: *See*—
Boehringer, Wilfred E.; and Pastor, Vincent J., 4,498,647, Cl. 244-75.00R.

Pastor, William, to Torrington Company, The. Drive assembly coupling. 4,498,888, Cl. 464-112.000.

Paulet, Jean-Francois; and Eisenlohr, Othmar, to Swiss Aluminium Ltd. Device for producing dispersion coatings. 4,498,967, Cl. 204-272.000.

Pav, Josef; Schmitz, Wimmar; and Wenzel, Reinhard, to Kleinewefers GmbH. Calendar. 4,498,383, Cl. 100-162.00B.

Pavek, Miloslav, to Elitex, koncern textilniho strojirenstvi. Method of and apparatus for splicing fiber formations. 4,498,279, Cl. 57-22.000.

Pavek, Miloslav; and Hlubucek, Ladislav, to ELITEX, koncern textilniho strojirenstvi. Method of and apparatus for preparing and splicing the ends of fibrous formations. 4,498,280, Cl. 57-22.000.

Payez International Limited: *See*—
Mitchell, Barclay; and Moore, Kenneth, 4,499,135, Cl. 428-137.000.

Payne, Thomas R., to General Electric Company. Utensil removal detection system for cooking appliance. 4,499,368, Cl. 219-452.000.

Pazhenchevsky, Barak: *See*—
Kosower, Edward M.; Pazhenchevsky, Barak; and Hershkowitz, Eli, 4,499,254, Cl. 548-359.000.

Peake, Steven L.: *See*—
Raghu, Sivaraman; and Peake, Steven L., 4,499,283, Cl. 548-343.000.

Pearson, Kenneth A.; and Zucker, Larry R., to International Business Machines Corporation. ROS Control of gas panel. 4,499,460, Cl. 340-771.000.

Pedersen, Bent: *See*—
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Peerce-Landers, Pamela J.: *See*—
Davison, John B.; Jasinski, Raymond J.; and Peerce-Landers, Pamela J., 4,499,025, Cl. 260-465.00R.

Peil, William: *See*—
Bitting, Ricky F.; Peil, William; Brown, Thomas A.; and Guzek, William K., 4,499,408, Cl. 318-254.000.

Pelt, Thomas E.: *See*—
Barnum, Thomas G.; and Pelt, Thomas E., 4,498,203, Cl. 4-427.000.

Peltonen, Eero; Somerikko, Aarni; and Viitanen, Timo, to Kajaani Oy. Procedure and means for measuring the coal content in quick ash. 4,498,338, Cl. 73-432.00R.

Peper, Henry; Eaton, Thomas E.; and Ferguson, Edward J., to Gillette Company, The. Pressurized cartridge for a writing instrument. 4,498,797, Cl. 401-141.000.

Peppler, Michael S., to AMP Incorporated. Cable shield grounding clamp. 4,498,715, Cl. 339-14.00R.

Pera, Didier: *See*—
Pera, Jean; and Pera, Didier, 4,498,382, Cl. 100-117.000.

Pera, Jean; and Pera, Didier, to Societe S.O.M.A.V.I. Screw press for grape crop. 4,498,382, Cl. 100-117.000.

Pereira, Carmo J.: *See*—
Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,499,206, Cl. 502-304.000.

Peretrukhin, Filipp I.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Perfect Data Corporation: *See*—
Purdy, Richard T.; and Packard, Alden H., 4,499,516, Cl. 360-128.000.

Peries, Jean-Pierre: *See*—
Billon, Alain; Le Page, Jean-Francois; and Peries, Jean-Pierre, 4,498,974, Cl. 208-96.000.

Perlov, Gena; and Tuchman, Samuel. Method and device for fluid transfer. 4,498,850, Cl. 417-322.000.

Permelec Electrode Ltd.: *See*—
Asano, Hiroshi; Shimamune, Takayuki; and Goto, Toshiki, 4,498,942, Cl. 156-151.000.

Perreton, Arnold. Concrete block and hollow insulating insert therefor. 4,498,266, Cl. 52-405.000.

Perrot, Jacques J.: *See*—
Thominet, Michel L.; and Perrot, Jacques J., 4,499,019, Cl. 514-428.000.

Peters, Albin, to Wico Corporation. Wide face horizontally movable kicker for pin ball game. 4,498,670, Cl. 273-129.00V.

Peters, Edwin F.: *See*—
Klotz, Marvin R.; and Peters, Edwin F., 4,499,325, Cl. 585-671.000.

Peters, Thomas E.: *See*—
McColl, James R.; and Peters, Thomas E., 4,499,005, Cl. 252-301.60S.

Petersen, Paul S., to Novus Inc. Plate glass repair apparatus and method. 4,498,940, Cl. 156-98.000.

Peterson, Thomas D., to Sperry Corporation. Apparatus for limiting electromagnetic interference radiation. 4,498,546, Cl. 174-35.00R.

Petit, William A.: *See*—
Smith, Barry L.; Hoelscher, James R.; and Petit, William A., 4,498,650, Cl. 246-122.00R.

Petrini, Guido: *See—*
Moreschini, Luciano; Dalloro, Leonardo; Cavaterra, Enrico; Petrini, Guido; and Covini, Romano, 4,499,302, Cl. 562-599.000.

Petro-Williams Service Company: *See—*
Garrett, Luther W., Jr., 4,498,992, Cl. 210-664.000.

Petrovsky, Jan; and Roloff, Heinz, to Daimler-Benz Aktiengesellschaft. Reciprocating piston air compressor. 4,498,848, Cl. 417-253.000.

Petters, Willi: *See—*
Fischer, Klaus; Kroschel, Heinz; Nicodemus, Joachim; and Petters, Willi, 4,498,393, Cl. 102-393.000.

Pettigrew, Archibald M. Digital magnetic recording. 4,499,508, Cl. 360-41.000.

Pfizer Inc.: *See—*
Pirie, Donald K.; Volkmann, Robert A.; and Kleinman, Edward F., 4,499,017, Cl. 260-245.20R.

Pham, Ha Q.: *See—*
Wang, Chun S.; Pham, Ha Q.; and Bertram, James L., 4,499,255, Cl. 528-95.000.

Pharmuka Laboratoires: *See—*
Dubroeucq, Marie-Christine; Renault, Christian; and Le Fur, Gerard, 4,499,094, Cl. 514-301.000.

Phelps, Frankie E.; Francis, Thomas L.; and LaCamera, Alfred F., to Aluminum Company of America. Process for producing beta'-silicon aluminum oxynitride (B'-SiAlON) using discrete particles. 4,499,193, Cl. 501-98.000.

Philamon, Inc.: *See—*
Grib, Boris F., 4,499,436, Cl. 331-116.00M.

Philip Morris Incorporated: *See—*
Bowling, James A.; and David, Wallace M., 4,498,390, Cl. 101-365.000.
Brinker, Reiner G., 4,499,361, Cl. 219-121.0LK.
Full, Donald A., 4,498,858, Cl. 425-466.000.
Martin, Peter, 4,499,362, Cl. 219-121.0LA.
Smith, Robert N., 4,498,486, Cl. 131-300.000.
Wiese, Lee, 4,498,714, Cl. 312-312.000.

Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, to Hussmann Store Equipment Limited. Non-flooding remote air cooled condensers. 4,498,308, Cl. 62-184.000.

Phillips Petroleum Company: *See—*
Bailey, Fay W., 4,499,227, Cl. 524-399.000.
Bruning, Donald D., 4,498,539, Cl. 166-294.000.
Jensen, Bruce A., 4,498,916, Cl. 62-21.000.
Kukes, Simon G.; and Banks, Robert L., 4,499,328, Cl. 585-646.000.
LaSpisa, Ronald J.; Likins, Merle R., Jr.; and King, William R., 4,498,428, Cl. 122-448.00R.
McDaniel, Max P., 4,499,199, Cl. 502-104.000.
Messura, Kathleen A.; and Ayres, Charles A., 4,499,263, Cl. 528-483.000.
Parker, Ray A., Jr., 4,499,037, Cl. 264-37.000.
Schirmer, Robert M.; and Fromm, Ellsworth H., 4,498,287, Cl. 60-39.020.

Piacenti, Franco; Ciampelli, Federigo; and Pasetti, Adolfo, to Montedison S.p.A.; and Consiglio Nazionale Delle Ricerche. Protecting materials subject to degradation by atmospheric and polluting agents by means of perfluoropolyethers. 4,499,146, Cl. 428-422.000.

Pichl, Heinz, to Volvo Penta AB. Blocking device for preventing axial movement in selected extent. 4,498,874, Cl. 440-83.000.

Piepenbreier, Ernst, to Thyssen Industrie AG. Disc brake arrangement for rail vehicles. 4,498,562, Cl. 188-58.000.

Piesch, Steffen: *See—*
Engelhardt, Friedrich; Piesch, Steffen; Balzar, Juliane; and Dawson, Jeffery C., 4,499,232, Cl. 524-548.000.

Pietrasanta, Yves J. D.: *See—*
Battais, Alain; Boutevin, Bernard J. L.; and Pietrasanta, Yves J. D., 4,499,022, Cl. 260-429.700.

Piezo Electric Products, Inc.: *See—*
Kolm, Henry H.; and Kolm, Eric A., 4,498,851, Cl. 417-322.000.

Pike, John E.: *See—*
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,499,293, Cl. 549-465.000.

Pilat, John F.: *See—*
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.

Pilpel, Edward; and Meatto, Franklin, to Olin Corporation. Laminated ski reinforcement members. 4,498,686, Cl. 280-610.000.

Pinches, Anthony: *See—*
Atkinson, Bernard; Black, Geoffrey M.; Pinches, Anthony; and Lewis, Paul J. S., 4,498,985, Cl. 210-151.000.

Pine, Lloyd A.; and Cull, Neville L., to Exxon Research & Engineering Co. Phosphorus-containing catalyst and catalytic cracking process utilizing the same. 4,498,975, Cl. 208-114.000.

Pioger, Michel: *See—*
Prioux, Jean-Jacques; Meleard, Roger; Pioger, Michel; and Lasvaladas, Jean-Jacques, 4,499,343, Cl. 200-5.00A.

Pioneer Electronic Corporation: *See—*
Suzuki, Tsutomu, 4,499,503, Cl. 358-316.000.

Piotrowski, Chester; and Loeding, Neil W., to Minnesota Mining and Manufacturing Company. Integrated magnetostrictive-piezoresistive magnetic recording playback head. 4,499,515, Cl. 360-113.000.

Pirie, Donald K.; Volkmann, Robert A.; and Kleinman, Edward F., to Pfizer Inc. Beta-lactamase inhibiting 6-(alkoxyamino-methyl) penicillanic acid 1,1-dioxide and derivatives. 4,499,017, Cl. 260-245.20R.

Pitchford, Edward J., to Rain Bird Sprinkler Mfg. Corp. Reaction drive sprinkler. 4,498,626, Cl. 239-230.000.

Piteau, Marc D.: *See—*
Burgard, Michel; Piteau, Marc D.; Rollat, Alain J.; and Senet, Jean-Pierre G., 4,499,057, Cl. 423-8.000.

Pitney Bowes Inc.: *See—*
Daniels, Edward P.; and Dlugos, Daniel F., 4,499,545, Cl. 364-464.000.

Pittet, Alan O.; Muralidhara, Ranya; and Hagedorn, Myrna L., to International Flavors & Fragrances Inc. Process for preparing 4,4A,5,6-tetrahydro-7-methyl-2-(3H)-naphthalenone, intermediates used in said process and novel crystalline form of same. 4,499,307, Cl. 568-355.000.

Pittman, Homer F.; and Gage, Bobby D. Pumper bumper. 4,498,845, Cl. 417-545.000.

Plattsburgh Foundry, Inc.: *See—*
Carpentier, Urgel R., 4,498,492, Cl. 137-315.000.

Plessey Overseas Limited: *See—*
Duncan, William C. W., 4,498,718, Cl. 339-59.00M.

Plumail, Jean-Claude: *See—*
Toulhoat, Herve ; Plumail, Jean-Claude; Billon, Alain; and Quignard, Alain, 4,498,972, Cl. 208-59.000.

Plummer, William T., to Polaroid Corporation. Image carrying media employing an optical barrier. 4,499,164, Cl. 430-14.000.

Plummer, William T.: *See—*
Jones, Peter W. J.; Plummer, William T.; and Purcell, Dennis W., 4,498,748, Cl. 354-79.000.

Podell, Howard I.: *See—*
James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., 4,499,154, Cl. 428-494.000.

Podell, Howard L.: *See—*
James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., 4,499,154, Cl. 428-494.000.

Poissant, Philip L.: *See—*
Brema, Robert J.; Adamson, Gerald J.; Poissant, Philip L.; and Cleminson, John H., 4,498,660, Cl. 256-19.000.

Polaroid Corporation: *See—*
Benton, Stephen A., 4,498,729, Cl. 350-3.690.
Jones, Peter W. J.; Plummer, William T.; and Purcell, Dennis W., 4,498,748, Cl. 354-79.000.
Plummer, William T., 4,499,164, Cl. 430-14.000.

Polett, Muriel S.: *See—*
Polett, Walter J.; and Polett, Muriel S., 4,499,599, Cl. 383-6.000.

Polett, Walter J.; and Polett, Muriel S. Stackable flexible bulk container. 4,499,599, Cl. 383-6.000.

Polman, David J.: *See—*
Wamsley, Richard D.; and Polman, David J., 4,498,663, Cl. 270-54.000.

Polster, Peter: *See—*
Rosseels, Gilbert; and Polster, Peter, 4,499,095, Cl. 514-299.000.

Polydrain, Inc.: *See—*
Kirkpatrick, Larry E.; and Williams, Barry C., 4,498,807, Cl. 405-43.000.

Polysar Limited: *See—*
Sato, Kyosaku, 4,499,213, Cl. 523-335.000.

Polytype AG: *See—*
Schollkopf, Ernst; and Rimmele, Walter, 4,498,946, Cl. 156-324.000.

Pomeranz, Mark L. Condom with opening means for easy mounting. 4,498,466, Cl. 128-79.000.

Ponitzsch, Werner: *See—*
Reccius, Helmut; and Ponitzsch, Werner, 4,498,325, Cl. 72-302.000.

Ponomar, Vladislav I.: *See—*
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Pontagnier, Henri: *See—*
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,499,090, Cl. 514-210.000.

Poppert, Paul E.: *See—*
Goldman, Ernest A.; McCarthy, Jeremiah P.; and Poppert, Paul E., 4,498,223, Cl. 29-571.000.

Portmann, Albert, to Sodeco-Saia, AG. Snap action miniature switch. 4,499,346, Cl. 200-67.00D.

Post, Martin F. M.: *See—*
Hoek, Arend; Post, Martin F. M.; Minderhoud, Johannes K.; and Lednor, Peter W., 4,499,209, Cl. 518-707.000.

Postolaty, Nikolai I.: *See—*
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Potts, Roger F., to Convay Systems Limited. Machine and method for cleaning receptacles in a single immersion chamber having a soaking station and a scrubbing station. 4,498,934, Cl. 134-254.000.

Powell, David B.: *See—*
Castonguay, Roger N.; and Powell, David B., 4,499,344, Cl. 200-50.00C.

Powell, William H.; and Witters, Hugo F. J., to International Standard Electric Corporation. Supervision of transmission systems. 4,499,600, Cl. 455-9.000.

PPG Industries, Inc.: *See*—
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,150, Cl. 428-447.000.
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,151, Cl. 428-447.000.

Prakash, Nellikunja J.: *See*—
Sunkara, Sai P.; and Prakash, Nellikunja J., 4,499,072, Cl. 424-85.000.

Prat, Gisele: *See*—
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,499,090, Cl. 514-210.000.

Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, to General Electric Company. Non-corrosive silicone RTV compositions. 4,499,234, Cl. 524-783.000.

Preco Industries Limited: *See*—
Ilukowicz, Robert J., 4,498,270, Cl. 52-685.000.

Preddey, Brian F.; and Mills, Laurence P., to Taboola Pty. Ltd. Cylinder locks and keys therefor. 4,498,327, Cl. 72-341.000.

Prein, Franz: *See*—
Karning, Heinrich; Prein, Franz; and Vierling, Karl-Heinz, 4,499,582, Cl. 372-93.000.

Presser, Gustave S., to Acme Engineering Products Ltd. Detection and control system based on ambient air quality. 4,499,377, Cl. 250-343.000.

Prima Progetti S.p.A.: *See*—
Grassi, Fabrizio; and Iannarelli, Luigi, 4,498,545, Cl. 173-43.000.

Prince, Connie J. Multi-purpose sheet. 4,499,133, Cl. 428-81.000.

Printed Circuits International, Inc.: *See*—
Chee, Aik T.; and Kiat, Wee S., 4,499,333, Cl. 174-52.0FP.

Printronix, Inc.: *See*—
Barrus, Gordon B.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holzer, Gerold, 4,498,793, Cl. 400-320.000.
Farb, Norman E., 4,498,388, Cl. 101-93.040.

Prioux, Jean-Jacques; Meleard, Roger; Pioger, Michel; and Lasvaladas, Jean-Jacques, to Rogers Corporation. Monolithic flat tactile keyboard. 4,499,343, Cl. 200-5.00A.

Proctor, David R.; and Foster, Terry L., to Science Research Center, Inc. Assembly for determining light transmissiveness of a fluid. 4,498,782, Cl. 356-436.000.

Produits Chimiques Ugine Kuhlmann: *See*—
Bernard, Michel; Balde, Daniel; Ghenassia, Elie; and Laumain, Francois, 4,499,222, Cl. 524-123.000.

Project Packaging, Inc.: *See*—
Allen, Frank W., 4,498,651, Cl. 248-65.000.

Proksch, Hans-Jorg; Welte, Dieter; Zimmer, Herbert; and Lotz, Michael, deceased (by Lotz, Carla, nee Post, Andreas Lotz, heirs), to Dornier GmbH. Wing for short take-off and landing aircraft. 4,498,646, Cl. 244-35.00R.

Provencal, Earl J.: *See*—
Guertin, Joseph J.; and Provencal, Earl J., 4,498,617, Cl. 228-119.000.

Pruller, Helmut: *See*—
Temme, Karl; Beckschafer, Klaus; and Pruller, Helmut, 4,498,986, Cl. 210-199.000.

Puccetti, Angelo: *See*—
Franchini, Mauro; Sarasso, Angelo; and Puccetti, Angelo, 4,498,439, Cl. 123-438.000.

Puccini, Sergio E.: *See*—
Krikor, Agop K.; and Puccini, Sergio E., 4,499,336, Cl. 179-18.0ES.

Pullukat, Thomas J.; Hoff, Raymond E.; and Lynch, Michael W., to Chemplex Company. Polymerization catalysts and methods. 4,499,198, Cl. 502-104.000.

Purcell, Dennis W.: *See*—
Jones, Peter W. J.; Plummer, William T.; and Purcell, Dennis W., 4,498,748, Cl. 354-79.000.

Purdue Research Foundation: *See*—
Ash, Stephen R.; Wolf, Gordon C.; and Bloch, Richard, 4,498,902, Cl. 604-164.000.

Purdy, Richard T.; and Packard, Alden H., to Perfect Data Corporation. Cleaning disk with opaque ring. 4,499,516, Cl. 360-128.000.

Purdy, Ronald R. Emergency stopping brake system for tractors and trailers. 4,498,560, Cl. 188-1.110.

Purnell, John H.: *See*—
Ballantine, James A.; Purnell, John H.; and Thomas, John M., 4,499,319, Cl. 585-467.000.

Pusineri, Christian; and Goletto, Jean, to Hospal-Sodip, S.A. Process of coating consisting of a mixture of vinyl chloride polymer and polyurethane with tertiary amine and/or ammonium groups. 4,499,124, Cl. 427-385.500.

Pustell, Robert A., to General Electric Company. Anti-vibration support for thermocouple tip. 4,499,330, Cl. 136-230.000.

Puziss, Abe. Portable heater for radiantly heating the underbody of a motor vehicle. 4,499,365, Cl. 219-205.000.

Pye, David S.; Ash, Donald L.; and Rardin, Robert W., to Union Oil Company of California. Method for placing a liner in a pressurized well. 4,498,543, Cl. 166-376.000.

Q. P. Corporation: *See*—
Tokano, Motoharu; and Kushima, Keiichi, 4,499,056, Cl. 422-299.000.

Quest, Thomas A. Adapter for receiving multi-hooks brackets of various model-designs. 4,498,653, Cl. 248-225.200.

Questel, John M.; and Madonia, Ralph J., to Carprotec, Inc. Temporary strippable protective laminate. 4,499,130, Cl. 428-42.000.

Queveau, Gerard. Retractable closure particularly sliding roof apparatus for a motor vehicle. 4,498,701, Cl. 296-216.000.

Quicksteel Engineering Pty. Ltd.: *See*—
Quittner, John P., 4,498,803, Cl. 404-6.000.

Quignard, Alain: *See*—
Toulhoat, Herve ; Plumail, Jean-Claude; Billon, Alain; and Quignard, Alain, 4,498,972, Cl. 208-59.000.

Quittner, John P., to Quicksteel Engineering Pty. Ltd. Moveable lane barrier locking system. 4,498,803, Cl. 404-6.000.

R. A. Jones & Co., Inc.: *See*—
Aultz, Thomas R.; Hughes, Charles C.; and Humbert, Stanley F., 4,498,567, Cl. 192-133.000.

Raba, Carl F., Jr.; Smith, Robert L.; and Huang, Francis Y., to Monier Resources, Inc. Process for the treatment of clay slimes. 4,498,993, Cl. 210-710.000.

Rabatin, Jacob G.: *See*—
Brines, Marjorie J.; and Rabatin, Jacob G., 4,499,159, Cl. 428-691.000.

Rademakers, Petrus J., to Datawell B.V. Anchoring system for a buoy, specially a measuring buoy. 4,498,877, Cl. 441-23.000.

Rader, Charles P., to Monsanto Company. Method of treating diene rubber with amino- and hydroxy aryl compounds. 4,499,243, Cl. 525-333.100.

Radke, Glen R.: *See*—
Barrus, Gordon B.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holzer, Gerold, 4,498,793, Cl. 400-320.000.

Radochonski, Pierre: *See*—
Eriksen, Joern B.; and Radochonski, Pierre, 4,499,501, Cl. 358-302.000.

Raftery, William B., to Steelcase Inc. Seating unit with front flex area. 4,498,702, Cl. 297-312.000.

Raghu, Sivaraman; and Peake, Steven L., to American Cyanamid Company. Process for preparing 1-substituted-6-n-propyl-8-methylimidazo[1,5-d]-as-triazin-4-(3H)-ones. 4,499,283, Cl. 548-343.000.

Rain Bird Sprinkler Mfg. Corp.: *See*—
Pitchford, Edward J., 4,498,626, Cl. 239-230.000.

Rake, Heinrich; Herchenbach, Horst; Jager, Gernot; and Franck, Gerhard, to Klockner-Humboldt-Deutz AG. Method and device for regulating the burning process of a cement burning system. 4,498,930, Cl. 106-100.000.

Ramachandran, Kovilvila, to Canadian Patents and Development Limited-Societe Candienne des Brevets et D'Exploitation (Limitee. Sputtering apparatus and method. 4,498,969, Cl. 204-298.000.

Rambo, William R., to SRI International. Reception enhancement in mobile FM broadcast receivers and the like. 4,499,606, Cl. 455-277.000.

Ramet, Claude; and Rojey, Alexandre, to Institut Francais du Petrole. Process for the heating and/or thermal conditioning of a building by means of a heat pump operated with a specific mixture of working fluids. 4,498,999, Cl. 252-67.000.

Rancourt, Martha W.: *See*—
Sujansky, Daniel J.; and Rancourt, Martha W., 4,499,183, Cl. 435-6.000.

Rand, James L., to United States of America, National Aeronautics and Space Administration. Thin film strain transducer. 4,498,231, Cl. 29-610.0SG.

Rank Xerox, Ltd.: *See*—
Okamoto, Yoshikazu, 4,499,166, Cl. 430-33.000.

Rao, Basrur R., to Sperry Corporation. Cross polarization compensation technique for a monopulse dome antenna. 4,499,473, Cl. 343-754.000.

Rappaport, Elazar: *See*—
Korin, Eliyaho; Rappaport, Elazar; Pasternak, Dov; Roy, Aharon S.; and Wolf, David, 4,498,459, Cl. 126-430.000.

Raque Food Systems Inc.: *See*—
Raque, Glen F.; and Robinson, Edward A., 4,498,358, Cl. 74-829.000.

Raque, Glen F.; and Robinson, Edward A., to Raque Food Systems Inc. Oscillating head filler device. 4,498,358, Cl. 74-829.000.

Rardin, Robert W.: *See*—
Pye, David S.; Ash, Donald L.; and Rardin, Robert W., 4,498,543, Cl. 166-376.000.

Rautenstrauch, Valentin, to Firmenich, SA. Process for the preparation of alkylated cyclopentenones. 4,499,297, Cl. 560-231.000.

Ravreby, F. A.: *See*—
Kirkpatrick, Harold B.; Ravreby, Fred A.; and Richbourg, Henry L., 4,498,467, Cl. 128-90.000.

Ravreby, Fred A.: *See*—
Kirkpatrick, Harold B.; Ravreby, Fred A.; and Richbourg, Henry L., 4,498,467, Cl. 128-90.000.

Ray, John M., III; and Martin, Robert J., to General Electric Company. Walsh function mixer and tone detector. 4,499,550, Cl. 364-606.000.

Raychem Corporation: *See*—
Campbell, Bruce D.; and Fentress, Vernon A., 4,498,732, Cl. 350-96.200.
Cornelius, Rajendra S.; Martin, Albert R.; Lunk, Hans E.; and Mendenhall, Mark D., 4,499,438, Cl. 333-1.000.
Kridl, Thomas A.; Claunch, Carney P.; and Bjornstrom, Ann O., 4,499,129, Cl. 428-36.000.

Rayfield, Wilson P.: *See*—
Lance, Wayne E.; and Rayfield, Wilson P., 4,498,757, Cl. 355-3.0FU.

Raytheon Company: *See*—
Torino, Arthur J., Jr.; Bouchard, George A.; and Keane, Philip A., 4,499,466, Cl. 343-7.300.

RCA Corporation: *See—*
Deyer, Craig E., 4,499,588, Cl. 377-42.000.
Dischert, Robert A.; and Topper, Robert J., 4,499,494, Cl. 358-164.000.
Hermeling, Gilbert C., Jr.; and Muterspaugh, Max W., 4,499,602, Cl. 455-180.000.
Jastrzebski, Lubomir L.; and Lagowski, Jacek, 4,498,772, Cl. 356-357.000.
Levine, Peter A., 4,499,497, Cl. 358-213.000.
Southgate, Peter D.; Fairbanks, David W.; Davis, Richard B.; and Beltz, John P., 4,498,779, Cl. 356-384.000.
White, Lawrence K., 4,498,775, Cl. 356-375.000.

RCA, Inc.: *See—*
Yamazaki, Tsuneo; Faltas, Mervat; and Webb, Paul P., 4,499,483, Cl. 357-30.000.

Reccius, Helmut; and Ponitzsch, Werner, to Walter Eckold GmbH & Co. KG; and Dornier GmbH. Method for shaping panels by a bending operation, in particular panels for aircraft fuselage skin, and apparatus for implementing such method. 4,498,325, Cl. 72-302.000.

Reed, Geoffrey R., to Encomech Product Development Limited; and Head Wrightson Machine Company Limited. Handling and packaging apparatus. 4,498,276, Cl. 53-588.000.

Regebro, Christer, to Forenade Fabriksverken. Arrangement for a terminally guided projectile provided with a target seeking arrangement and path correction arrangement. 4,498,394, Cl. 102-489.000.

Regel, Erik: *See—*
Holmwood, Graham; and Regel, Erik, 4,499,281, Cl. 548-262.000.

Reichman, James M.: *See—*
Nelson, Terry L.; and Reichman, James M., 4,498,813, Cl. 405-182.000.

Reichmann, Wolfgang: *See—*
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.

Reiling, Gilbert H.: *See—*
Graves, James A.; and Reiling, Gilbert H., 4,499,401, Cl. 313-315.000.

Reimer, William A., to GTE Communication Systems Corp. Printed wiring board interconnect arrangement. 4,498,717, Cl. 339-17.0LM.

Reisser, Fritz, to Sandoz Ltd. Triazoles, and their use against insect pests. 4,499,280, Cl. 548-255.000.

Reist, Walter, to Ferag AG. Apparatus for removing from a product stream conveyed by means of a conveyor device flexible, flat products, especially printed products. 4,498,664, Cl. 271-204.000.

Reitmaa, Ilpo: *See—*
Martio, Asko; Reitmaa, Ilpo; and Lautamo, Esa, 4,498,479, Cl. 128-639.000.

Remond, Pierre: *See—*
Deborde, Albert H.; and Remond, Pierre, 4,498,639, Cl. 242-47.010.

Renaud, Pierre, to Valeo. Clutch release bearing. 4,498,565, Cl. 192-98.000.

Renaud, Pierre, to Valeo. Pull type clutch releasing bearings and method of attaching clutch release bearing to clutch fork. 4,498,566, Cl. 192-98.000.

Renault, Christian: *See—*
Dubroeucq, Marie-Christine; Renault, Christian; and Le Fur, Gerard, 4,499,094, Cl. 514-301.000.

Renwick, John D.: *See—*
Curtis, John R.; and Renwick, John D., 4,499,175, Cl. 430-253.000.
Curtis, John R.; and Renwick, John D., 4,499,176, Cl. 430-253.000.

Research Corporation: *See—*
Wyrick, Steven D.; Hall, Iris H.; and Dubey, Agnes, 4,499,303, Cl. 514-605.000.

Revere Copper and Brass Incorporated: *See—*
Tong, Hua S., 4,499,050, Cl. 420-528.000.
Tong, Hua S., 4,499,051, Cl. 420-540.000.

Revici, Emanuel. Methods for counteracting the deleterious effects of sodium chloride. 4,499,078, Cl. 424-153.000.

Reynolds Metals Company: *See—*
Arfert, Horst F. W.; and Leyco, Reynaldo P., 4,498,575, Cl. 198-400.000.
Tabereaux, Alton T., 4,498,966, Cl. 204-243.00R.

Rheinische Braunkohlenwerke AG: *See—*
Ruter, Bernhard, 4,498,632, Cl. 241-18.000.

Rhone-Poulenc S.A.: *See—*
Fitoussi, Richard; Leveque, Alain; and Sabot, Jean-Louis, 4,499,058, Cl. 423-70.000.

Rhone-Poulenc Specialities Chimiques: *See—*
Grosbois, Jean; Jacubert, Serge; and Verdier, Jean-Michel, 4,499,063, Cl. 423-347.000.

Richard, Gordon L., to Baptist Medical Center of Oklahoma, Inc. Amplitude modulation apparatus and method. 4,499,339, Cl. 179-107.0FD.

Richard, Michael A.: *See—*
Vanderspurt, Thomas H.; Richard, Michael A.; and Montagna, Angelo A., 4,499,204, Cl. 502-301.000.

Richards, Gary H. Fluid-flow-control-switch valve. 4,499,347, Cl. 200-81.90M.

Richardson Graphics Company: *See—*
Amariti, Luigi; and Santos, Llandro C., 4,499,170, Cl. 430-169.000.

Richbourg, Henry L.: *See—*
Kirkpatrick, Harold B.; Ravreby, Fred A.; and Richbourg, Henry L., 4,498,467, Cl. 128-90.000.

Richmond, Michael S.: *See—*
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.

Richter, Arno, to Warner-Lambert Company. Supply apparatus for the enrichment of aquarium water with CO_2-gas. 4,498,417, Cl. 119-5.000.

Ricoch Company, Ltd.: *See—*
Segawa, Hideo; Mori, Koji; Itagaki, Masanori; Sakurai, Kohichi; and Ishiwata, Tatsumi, 4,499,384, Cl. 250-578.000.

Ricoh Company, Ltd.: *See—*
Jinnai, Koichiro, 4,499,475, Cl. 346-75.000.
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, 4,498,754, Cl. 354-479.000.
Tatara, Yoshikuni, 4,498,795, Cl. 400-637.100.

Riensch & Held (GmbH & Co.): *See—*
Wickstrom, Claes G., 4,498,841, Cl. 414-778.000.

Riesenberg, Klaus-Otto, to Robert Bosch GmbH. Apparatus for measuring fuel consumption in an internal combustion engine. 4,498,334, Cl. 73-113.000.

Rigamonti, Alessandro: *See—*
Moro, Luigi; Maffione, Grazia; Neri, Guido; and Rigamonti, Alessandro, 4,499,066, Cl. 424-19.000.

Right, Robert W., to General Signal Corporation. Power saver circuit for audio/visual signal unit. 4,499,453, Cl. 340-326.000.

Riker Laboratories, Inc.: *See—*
Gerster, John F., 4,499,270, Cl. 544-344.000.

Rimmele, Walter: *See—*
Schollkopf, Ernst; and Rimmele, Walter, 4,498,946, Cl. 156-324.000.

RIS Irrigation Systems Pty Ltd: *See—*
Tucker, Alfred D., 4,498,628, Cl. 239-381.000.

Rittenbach, Otto, to United States of America, Army. Doppler radar sets with target direction sensing capability. 4,499,467, Cl. 343-9.00R.

Ritter, Horst; and Herpers, Edmund-Theo, to Dr. C. Otto & Comp. G.m.b.H. Process for removing hydrogen sulfide from gases, particularly coal distillation gases. 4,499,060, Cl. 423-232.000.

Roberson, Richard E.: *See—*
Mosley, William H.; Sanders, David E.; and Roberson, Richard E., 4,499,585, Cl. 375-62.000.

Robert Bosch GmbH: *See—*
Gruner, Heiko, 4,498,337, Cl. 73-204.000.
Knorreck, Peter; Kuhne, Wolfgang; and Muller, Norbert, 4,498,499, Cl. 137-627.500.
Locher, Johannes; and Schaller, Dieter, 4,499,412, Cl. 318-592.000.
Riesenberg, Klaus-Otto, 4,498,334, Cl. 73-113.000.
Tissot, Raymond, 4,498,442, Cl. 123-447.000.

Robertson, John R., to ICI Americas Inc. Stable dispersions of polyisocyanates containing polysiloxane mold release agents. 4,498,929, Cl. 106-38.200.

Robinson, Edward A.: *See—*
Raque, Glen F.; and Robinson, Edward A., 4,498,358, Cl. 74-829.000.

Roccaforte, Harry I., to Champion International Corporation. Carton with carrying handle. 4,498,619, Cl. 229-52.00B.

Roccaforte, Harry I.: *See—*
Dickert, James C.; Roccaforte, Harry I.; and Wysocki, Lawrence S., 4,498,620, Cl. 229-52.00A.

Rock, Orville J.: *See—*
Shonley, Ivan T.; and Rock, Orville J., 4,498,872, Cl. 440-63.000.

Rockwell International Corporation: *See—*
Glass, Howard L., 4,499,061, Cl. 423-277.000.
Grantham, LeRoy F.; and Heath, Norman W., 4,498,347, Cl. 73-861.660.
Thompson, William J., 4,499,434, Cl. 331-17.000.
von Bieren, Karlheinz, 4,498,773, Cl. 356-360.000.
Vrolyk, John J., 4,498,531, Cl. 166-59.000.
Wells, Calvin G.; and Szabo, Steve B., 4,498,709, Cl. 301-5.0VH.

Rodd, Derek E., to Minitube Systems. Hot water heating system. 4,498,623, Cl. 237-8.00R.

Roe, Jin-Young K.: *See—*
Blasing, Elmer P.; Keeling, Ronald J.; and Roe, Jin-Young K., 4,499,125, Cl. 428-503.000.

Rogers Corporation: *See—*
Fishman, David S., 4,499,519, Cl. 361-306.000.
Prioux, Jean-Jacques; Meleard, Roger; Pioger, Michel; and Lasvaladas, Jean-Jacques, 4,499,343, Cl. 200-5.00A.

Rohmer, Daniel J.: *See—*
Greslin, Bernard P.; and Rohmer, Daniel J., 4,498,234, Cl. 29-785.000.

Rohr, Wolfgang: *See—*
Eicken, Karl; Rohr, Wolfgang; and Wuerzer, Bruno, 4,498,922, Cl. 71-111.000.

Rojey, Alexandre: *See—*
Ramet, Claude; and Rojey, Alexandre, 4,498,999, Cl. 252-67.000.

Rollat, Alain J.: *See—*
Burgard, Michel; Piteau, Marc D.; Rollat, Alain J.; and Senet, Jean-Pierre G., 4,499,057, Cl. 423-8.000.

Rollform, Incorporated: *See—*
Adams, George C., 4,498,272, Cl. 52-714.000.

Rolls-Royce Limited: *See—*
Jeffery, Graham J., 4,498,291, Cl. 60-39.091.
Smith, Stanley, 4,498,525, Cl. 165-39.000.

Roloff, Heinz: *See—*
Petrovsky, Jan; and Roloff, Heinz, 4,498,848, Cl. 417-253.000.

Roming, Helmut. Massage apparatus. 4,498,463, Cl. 128-37.000.

Rommler, Josef: *See*—
Paisley, Gary V.; Altschuler, J. George; and Rommler, Josef, 4,499,141, Cl. 428-318.800.
Rosaen, Lars O., to Universal Filters, Inc. Flow meter bypass valve assembly. 4,498,497, Cl. 137-599.100.
Rosborg, Daniel J.: *See*—
Tauber, Richard J.; and Rosborg, Daniel J., 4,499,527, Cl. 362-267.000.
Rose, Rene, to Flonic S.A. Electrical connection system. 4,499,371, Cl. 235-492.000.
Rosemount Engineering Company Limited: *See*—
Johnston, James S., 4,499,373, Cl. 250-231.00P.
Rosenbaum, Walter S.: *See*—
Brickman, Norman F.; and Rosenbaum, Walter S., 4,499,499, Cl. 358-263.000.
Rosendall, Henry J., to Bissell Inc. Floor sweeper with improved drive wheel construction. 4,498,207, Cl. 15-42.000.
Rosenkranz, Otto: *See*—
Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, 4,499,044, Cl. 264-521.000.
Ross, Alan R., to Eaton Corporation. Shifting mechanism. 4,498,350, Cl. 74-89.150.
Ross, John M., to Continental Packaging Company, Inc. In-mold labeler—dual parison. 4,498,854, Cl. 425-116.000.
Ross, Richard J.; and Speller, David J., to Baker Oil Tools, Inc. Method of washing, injecting swabbing or flow testing subterranean wells. 4,498,536, Cl. 166-250.000.
Rosseels, Gilbert; and Polster, Peter, to Sanofi. Indolizine derivatives and their use in treating heart ailments. 4,499,095, Cl. 514-299.000.
Roth, Jurgen: *See*—
Bruning, Rolf; and Roth, Jurgen, 4,499,191, Cl. 436-160.000.
Roth, Reinhold C.; and Terra, Richard F., to Techmark Corporation. Method and apparatus for uniformly drying moving webs. 4,498,864, Cl. 432-8.000.
Rothwell, Harold L.: *See*—
Fohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., 4,499,396, Cl. 313-25.000.
Rottenbacher, Reinhard, to Dornier System GmbH. Method of brazing silicon carbide parts using Si-Co solder. 4,499,360, Cl. 219-85.00H.
Rouly, Eric; and Douville, Jean-Pierre, to Societe d'Exploitation des Machines Dubuit. Silk screen printing machine. 4,498,386, Cl. 101-40.000.
Rouse, Russell V., to Snapper Power Equipment, Division of Fuqua Industries, Inc. Lawn mower friction drive mechanism. 4,498,552, Cl. 180-70.100.
Roussel, Jacques, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude. Method and apparatus for in-situ mining by leaching ores containing metal values. 4,498,705, Cl. 299-4.000.
Rowlette, John J., to United States of America, National Aeronautics and Space Administration. State-of-charge coulometer. 4,499,424, Cl. 324-427.000.
Roy, Aharon S.: *See*—
Korin, Eliyaho; Rappaport, Elazar; Pasternak, Dov; Roy, Aharon S.; and Wolf, David, 4,498,459, Cl. 126-430.000.
RPC Industries: *See*—
Loda, Gary K., 4,499,405, Cl. 315-13.100.
Ru-Korrel (Propietary) Limited: *See*—
Botha, Charles F.; and Lambrechts, Adriaanus L., 4,498,856, Cl. 425-331.000.
Rubinstein, Israel, to General Electric Company. Electrochemical method for visual detection of nonmetallic surface inclusions in metallic substrates. 4,498,960, Cl. 204-1.00T.
Rudolph, Joachim, to Werner & Pfleiderer. Process for mixing and proportioning several mixing components. 4,498,783, Cl. 366-132.000.
Runkle, Charles J., to Monsanto Company. Method for fracturing a tube sheet. 4,498,616, Cl. 225-1.000.
Runner, Robert R. System for practicing roping. 4,498,676, Cl. 273-336.000.
Runtal Holding Company S.A.: *See*—
de Palezieux, Jacques; and Jobin, Georges F., 4,498,529, Cl. 165-176.000.
Ruscheweyh, Hans, to Balcke-Durr Aktiengesellschaft. Apparatus for mixing at least two individual streams having different thermodynamic functions of state. 4,498,786, Cl. 366-336.000.
Russell, Burdsall & Ward Corporation: *See*—
Pamer, Walter R.; Zils, James A.; and Capuano, Terry D., 4,498,825, Cl. 411-11.000.
Ruter, Bernhard, to Rheinische Braunkohlenwerke AG. Process for grind-drying wet solid fuel. 4,498,632, Cl. 241-18.000.
Rutledge, Joseph: *See*—
Valone, Frederick W.; and Rutledge, Joseph, 4,499,006, Cl. 252-392.000.
Rutledge, Raleigh N.: *See*—
Hahn, Granville J.; Rutledge, Raleigh N.; and Murley, Jackie D., 4,499,041, Cl. 264-173.000.
Rutsch, Werner: *See*—
Husler, Rinaldo; Rutsch, Werner; and Dietliker, Kurt, 4,498,964, Cl. 204-159.230.
Ryan, Kenneth M.: *See*—
Melillo, David G.; and Ryan, Kenneth M., 4,499,278, Cl. 548-240.000.
Ryoke, Katsumi: *See*—
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.
S&C Electric Company: *See*—
Swanson, Roy T., 4,499,446, Cl. 337-30.000.
Sabanovic, Asif: *See*—
Izosimov, Dimitrij B.; and Sabanovic, Asif, 4,499,413, Cl. 318-802.000.
Sabot, Jean-Louis: *See*—
Fitoussi, Richard; Leveque, Alain; and Sabot, Jean-Louis, 4,499,058, Cl. 423-70.000.
Saburo, Numata, to Fuji Photo Optical Co., Ltd. Electronic discharge tube and electronic light emitter using it. 4,499,406, Cl. 315-57.000.
Sacrini, Egeo: *See*—
Fontana, Alberto; Fontanelli, Renzo; Sacrini, Egeo; and Cicchetti, Osvaldo, 4,499,273, Cl. 546-188.000.
Sadeh, Yaacov, to Beta Engineering & Development Ltd. Automatic sewing apparatus. 4,498,404, Cl. 112-121.120.
Sadler, Loren G., to Sperry Corporation. Drive mechanism for a manure spreader. 4,498,630, Cl. 239-677.000.
Sadlowsky, Josef: *See*—
Christophliemk, Peter; Novotny, Rudolf; von Laufenberg, Jurgen; and Sadlowsky, Josef, 4,499,062, Cl. 423-332.000.
Sahatchieva, Maria A.: *See*—
Konstantinov, Ivan T.; Mednikarov, Borislav D.; Sahatchieva, Maria A.; and Burov, Atanas T., 4,499,173, Cl. 430-278.000.
Saito, Norio: *See*—
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.
Saito, Tomoharu: *See*—
Kubo, Akira; Ishii, Akihiko; Nishizaki, Ken; and Saito, Tomoharu, 4,499,225, Cl. 524-276.000.
Saitoh, Minoru; Arimatsu, Yoshikazu; Tani, Katsuya; and Mitamura, Hideyuki, to Toyo Boseki Kabushiki Kaisha. Polyurethane composition improved in dyeing property. 4,499,221, Cl. 524-109.000.
Saitoh, Noriaki: *See*—
Harada, Masato; Iijima, Makoto; and Saitoh, Noriaki, 4,499,194, Cl. 502-8.000.
Saitoh, Sumio: *See*—
Yoshimura, Masaru; and Saitoh, Sumio, 4,499,217, Cl. 523-456.000.
Sakakibara, Naoji: *See*—
Hamajima, Shigemitsu; Nishimura, Tomoaki; Sakakibara, Naoji; and Kawata, Shoji, 4,499,542, Cl. 364-424.100.
Sakamaki, Hiroshi; and Suzuki, Yukio, to Nippon Piston Ring Co., Ltd. Vane-type compressor. 4,498,853, Cl. 418-268.000.
Sakamoto, Masafumi, to Japan Servo Co., Ltd. End bracket for motor. 4,499,391, Cl. 310-89.000.
Sakamoto, Masaharu: *See*—
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.
Sakamoto, Minoru. Cooling attachment for solar distiller. 4,498,959, Cl. 202-185.20A.
Sakano, Riichi; and Ubakata, Tadayoshi, to Sanden Corporation. Control device for a variable displacement compressor in an air conditioning system. 4,498,311, Cl. 62-227.000.
Sakuma, Shinzo; Warabi, Junichi; Kano, Masayuki; and Kashimoto, Yutaka, to Kabushiki Kaisha Meidensha. Vacuum interrupter. 4,499,349, Cl. 200-144.00B.
Sakurai, Kohichi: *See*—
Segawa, Hideo; Mori, Koji; Itagaki, Masenori; Sakurai, Kohichi; and Ishiwata, Tatsumi, 4,499,384, Cl. 250-578.000.
Sakurai, Shigeru: *See*—
Satow, Haruhiko; Okimoto, Haruo; Sakurai, Shigeru; and Oda, Hiroyuki, 4,498,429, Cl. 123-26.000.
Sakurai, Tadashi: *See*—
Gross, William H.; and Sakurai, Tadashi, 4,499,432, Cl. 330-296.000.
Salomon, Georges P. J.; and Hue, Jean, to Salomon S.A. Pivotable cross-country ski binding. 4,498,687, Cl. 280-615.000.
Salomon S.A.: *See*—
Salomon, Georges P. J.; and Hue, Jean, 4,498,687, Cl. 280-615.000.
Salts, Thomas R., to Besser Industries, Inc. Article stacking apparatus. 4,498,831, Cl. 414-46.000.
Samvaz S.A.: *See*—
Derivaz, Charles, 4,498,513, Cl. 145-11.000.
Sanden Corporation: *See*—
Hiraga, Masaharu, 4,498,852, Cl. 418-55.000.
Sakano, Riichi; and Ubakata, Tadayoshi, 4,498,311, Cl. 62-227.000.
Sanders, David E.: *See*—
Mosley, William H.; Sanders, David E.; and Roberson, Richard E., 4,499,585, Cl. 375-62.000.
Sanders, Maurice R., to Godwin Warren Engineering Limited. Retractable wheel chock for railway wagons. 4,498,561, Cl. 188-36.000.
Sandoz, Inc.: *See*—
Brand, Leonard J.; and Nadelson, Jeffrey, 4,499,279, Cl. 548-247.000.
Sandoz Ltd.: *See*—
Dore, Jacky; and Moser, Helmut, 4,499,018, Cl. 260-245.810.
Reisser, Fritz, 4,499,280, Cl. 548-255.000.
Sanko Kiki Kabushiki Kaisha: *See*—
Yasue, Setsuo; and Yamamoto, Tomio, 4,498,835, Cl. 414-463.000.
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive compositions comprising an organic photoconductor and an amide compound and electro-photographic light-sensitive materials using the compositions. 4,499,167, Cl. 430-83.000.

Sano, Tadaaki: *See*—
Suzuki, Masamichi; Sugihara, Atsushi; Sano, Tadaaki; and Suzuki, Toshihiro, 4,499,123, Cl. 427-282.000.
Sanofi: *See*—
Hallot, Andre ; and Biziere, Kathleen, 4,499,092, Cl. 514-254.000.
Kirsch, Francis, 4,499,074, Cl. 424-94.000.
Rosseels, Gilbert; and Polster, Peter, 4,499,095, Cl. 514-299.000.
Sanshin Kogyo Kabushiki Kaisha: *See*—
Watanabe, Eifu, 4,498,875, Cl. 440-88.000.
Santen Pharmaceutical Co., Ltd.: *See*—
Oya, Masayuki; and Iso, Tadashi, 4,499,102, Cl. 514-365.000.
Santos, Llandro C.: *See*—
Amariti, Luigi; and Santos, Llandro C., 4,499,170, Cl. 430-169.000.
Sanuki, Toshio: *See*—
Shimada, Kengo; Chiba, Yutaka; and Sanuki, Toshio, 4,498,363, Cl. 84-1.010.
Sanyo Electric Co., Ltd.: *See*—
Kojima, Toshitada, 4,499,357, Cl. 219-10.55B.
Nakamura, Kenzi, 4,499,522, Cl. 361-331.000.
Sarasso, Angelo: *See*—
Franchini, Mauro; Sarasso, Angelo; and Puccetti, Angelo, 4,498,439, Cl. 123-438.000.
Sasaki, Hideharu; and Shimada, Keizo, to Teijin Limited. Aromatic polyamide paper-like sheet and processes for producing the same. 4,498,957, Cl. 162-146.000.
Sasaki, Minoru; and Kamiya, Toshiharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Drive circuit for display panel having display elements disposed in matrix form. 4,499,459, Cl. 340-752.000.
Sasaoka, Michio: *See*—
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.
Sato, Hideo: *See*—
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,499,167, Cl. 430-83.000.
Sato, Hiroshi; Ishii, Norio; and Nakamura, Shyuzo, to Sumitomo Chemical Company, Limited. Method for selective dealkylation of 1,4-dialkylbenzene. 4,499,321, Cl. 585-486.000.
Sato, Kozo: *See*—
Hirai, Hiroyuki; and Sato, Kozo, 4,499,172, Cl. 430-203.000.
Sato, Kunihiko, to Toyota Jidosha Kabushiki Kaisha. Ignition timing control unit for a car engine and method thereof. 4,498,438, Cl. 123-418.000.
Sato, Kyosaku, to Polysar Limited. Coagulation. 4,499,213, Cl. 523-335.000.
Sato, Ryo: *See*—
Suzuki, Yasutoshi; Hara, Kunihiko; and Sato, Ryo, 4,499,451, Cl. 340-98.000.
Sato, Tomosaburo: *See*—
Ono, Katsuyasu; and Sato, Tomosaburo, 4,498,222, Cl. 29-509.000.
Sato, Yo; and Kashiwaba, Tadao, to Kabushiki Kaisha Sato. Portable label applying machine. 4,498,950, Cl. 156-577.000.
Satoh, Akihiro: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,499,247, Cl. 526-142.000.
Satow, Haruhiko; Okimoto, Haruo; Sakurai, Shigeru; and Oda, Hiroyuki, to Mazda Motor Corporation. Fuel intake system for supercharged engine. 4,498,429, Cl. 123-26.000.
Sattelberg, Stanley E.; and Baker, George A., to Chicago Bridge & Iron Company. Resilient blanket with integral high strength facing and method of making same. 4,498,602, Cl. 220-452.000.
Satzinger, Gerhard: *See*—
Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.
Saurer-Diederichs Societe Anonyme: *See*—
Deborde, Albert H.; and Remond, Pierre, 4,498,639, Cl. 242-47.010.
Saylor, Millard P. Method for forming wire connection. 4,498,379, Cl. 100-2.000.
Scaccia, Carlo; and Overley, John R., to Ashland Oil, Inc. Isobutyryl fluoride manufacture. 4,499,029, Cl. 260-544.00A.
Scalesciani, Juan, to Farmatis S.r.l. Imidazole compound, the process for its preparation, and therapeutically active compositions containing same. 4,499,104, Cl. 514-396.000.
Schadlich, Gotthard, to VEB Kombinat Textima. Spraying apparatus for laundry mangles. 4,498,254, Cl. 38-14.000.
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, to Bayer Aktiengesellschaft. Process for the production of microcellular moldings from diisocyanate and compounds containing groups obtained by reacting amino groups with carbon dioxide. 4,499,038, Cl. 264-51.000.
Schaller, Dieter: *See*—
Locher, Johannes; and Schaller, Dieter, 4,499,412, Cl. 318-592.000.
Scheben, John A.; and Hinnenkamp, James A., to National Distillers and Chemical Corporation. Process for the production of esters. 4,499,298, Cl. 560-241.000.
Schechter, Michael M., to Ford Motor Company. Electromagnetic unit fuel injector and method for calibrating. 4,498,625, Cl. 239-5.000.
Schedewie, Franz: *See*—
Makosch, Gunter; and Schedewie, Franz, 4,498,771, Cl. 356-351.000.
Scheffee, Robert S., to Atlantic Research Corporation. Coal-water fuel slurries and process for making. 4,498,906, Cl. 44-51.000.
Scher, Herbert I.: *See*—
O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., 4,499,137, Cl. 428-211.000.
Schering Corporation: *See*—
Sequeira, Joel A.; and Zupon, Michael A., 4,499,108, Cl. 514-653.000.
Schibbye, (Lars) Lauritz B.; and Englund, Rolf A., to Sullair Technology AB. Valve arrangement for capacity control of screw compressors. 4,498,849, Cl. 417-299.000.
Schierz, Winfried; and Creutz, Helmut, to SEMIKRON Gesellschaft fur Gleichrichterbau und Elektronik mbH. Semiconductor unit. 4,499,485, Cl. 357-74.000.
Schindele, Ernst F. Rail system with passageways for the conduction of fluid flow. 4,498,693, Cl. 285-137.00R.
Schirk, Gunter; and Koninger, Horst, to Agfa-Gevaert Aktiengesellschaft. Arrangement for spacing and conveying overlapping photosensitive articles. 4,498,752, Cl. 354-301.000.
Schirmer, Robert M.; and Fromm, Ellsworth H., to Phillips Petroleum Company. Combustors and methods of operating same. 4,498,287, Cl. 60-39.020.
Schleimer, Stephen I.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.
Schlosser, Edward P. Method and apparatus for maintaining products at selected temperatures. 4,498,312, Cl. 62-457.000.
Schlosser, Erich J.; and Stephen, George, Jr., to Weber-Stephen Products Co. Kettle with ash catcher. 4,498,452, Cl. 126-9.00R.
Schlossman, Irwin S.: *See*—
Barlow, Anthony; Schlossman, Irwin S.; and Borgerding, Robert E., 4,499,013, Cl. 252-567.000.
Schlotzhauer, Kenneth G.; and Metz, Arthur J., to Tektronix, Inc. Trigger circuit. 4,499,386, Cl. 307-260.000.
Schlumberger Electronics (U.K.) Ltd.: *See*—
Bockett-Pugh, Charles, 4,499,419, Cl. 324-102.000.
Schlumberger Technology Corporation: *See*—
Sinclair, Paul L., 4,499,421, Cl. 324-339.000.
Sinclair, Paul L., 4,499,422, Cl. 324-339.000.
Schmidberger, Rainer: *See*—
Kock, Wulf; Schmidberger, Rainer; and Wagner, Wolfgang, 4,498,395, Cl. 102-517.000.
Schmidhuber, Karl; Wall, Helmut; and Demovic, Vojtech, to Keiper Recaro GmbH & Co. Seat for airplanes and buses. 4,498,703, Cl. 297-328.000.
Schmidt, Alfred. Snow removal. 4,498,253, Cl. 37-249.000.
Schmitz, Wimmar: *See*—
Pav, Josef; Schmitz, Wimmar; and Wenzel, Reinhard, 4,498,383, Cl. 100-162.00B.
Schneider, Alfred, to Siemens Aktiengesellschaft. Circuit arrangement for centrally-controlled telecommunication exchange systems, particularly for time-division multiplex telephone exchange systems, with information exchange between PBX devices. 4,499,461, Cl. 340-825.030.
Schneider, George W., Jr, to Singer Company, The. Metered gas volume correcting arrangement. 4,498,346, Cl. 73-861.010.
Schneider, Philip H.; Weber, J. William; and Massaro, Thomas A. Insulin infusion pump. 4,498,843, Cl. 417-22.000.
Schneiderman, Max, to Ipco Corporation. Electrosurgical unit. 4,498,475, Cl. 128-303.140.
Schnetzka, Harold R.; Wills, Frank E.; and Norbeck, Dean K., to Borg-Warner Corporation. Control system for controlling an SCR network to regulate three-phase A-C power flow. 4,499,534, Cl. 363-129.000.
Schobbe, Hermann, to Daimler-Benz Aktiengesellschaft. Sealing-ring arrangement for threaded closure bolt. 4,498,680, Cl. 277-112.000.
Scholl, Walter, to Bayer Aktiengesellschaft. Chromium complex azo dyestuffs and mixtures of chromium complex azo dyestuffs derivated from 1-amino-2-hydroxynaphtalene-4-sulphonic acids or aminophenols. 4,499,015, Cl. 534-697.000.
Scholle Corporation: *See*—
Scholle, William R.; and Lloyd-Davies, William, 4,498,508, Cl. 141-5.000.
Scholle, William R.; and Lloyd-Davies, William, to Scholle Corporation. Container filler. 4,498,508, Cl. 141-5.000.
Schollkopf, Ernst; and Rimmele, Walter, to Polytype AG. Apparatus and method for manufacturing a sandwich web. 4,498,946, Cl. 156-324.000.
Schortmann, Walter E., to Kendall Company, The. Microsized fabric. 4,499,139, Cl. 428-245.000.
Schou, Carl E. Self locking differential. 4,498,355, Cl. 74-650.000.
Schouhamer Immink, Kornelis A.; and Aarts, Ronaldus M., to U.S. Philips Corporation. Dropout circuit arrangement for converting an information signal into a rectangular signal. 4,499,570, Cl. 369-48.000.
Schreiner, Ceinwen A.: *See*—
Blackburn, Gary R.; Mackerer, Carl R.; and Schreiner, Ceinwen A., 4,499,187, Cl. 435-34.000.
Schuemann, Klaus D.: *See*—
Bright, Edward J.; Marpoe, Gary R., Jr.; Schuemann, Klaus D.; and Sheesley, Wilmer L., 4,498,725, Cl. 339-176.00M.
Schulmeyer, Herbert G., to Dentsply Research & Development Corp. Procedure for firing dental porcelain on metal. 4,498,865, Cl. 432-18.000.

Schupak, Leonard: *See*—
Harding, Philip A.; and Schupak, Leonard, 4,499,510, Cl. 360-77.000.

Schuss, Werner, to Siemens Aktiengesellschaft. Dental hand piece. 4,498,868, Cl. 433-29.000.

Schwob, Pierre, to SEB S.A. Device and method for wax depilation. 4,499,367, Cl. 219-421.000.

Science Research Center, Inc.: *See*—
Proctor, David R.; and Foster, Terry L., 4,498,782, Cl. 356-436.000.

Scifoni, Mario. Additive for Otto cycle engines and fuel mixture so obtained. 4,499,267, Cl. 44-51.000.

SCM Corporation: *See*—
Martino, Phillip C., 4,499,212, Cl. 523-201.000.

Scott, Burton W., to Mead Corporation, The. Driving circuit for radio frequency dryer. 4,499,358, Cl. 219-10.770.

Scott, Peter J. Apparatus for determining the position of a point on an object or the shape of a portion thereof. 4,498,777, Cl. 356-376.000.

Scott, Raymond G., to Champion International Corporation. Reclosable packaging system and method for forming same. 4,498,588, Cl. 206-526.000.

Scott, Raymond G.; and McNulty, Sherry M., to Champion International Corporation. Locking hinge for reclosable package. 4,498,589, Cl. 206-526.000.

SDS-Elektro G.m.b.H.: *See*—
Dietrich, Bernhard, 4,499,345, Cl. 200-67.00F.

SEB S.A.: *See*—
Schwob, Pierre, 4,499,367, Cl. 219-421.000.

Sebag, Henri; and Vanlerberghe, Guy, to L'Oreal. Tensio-active polypod compounds, process for preparing them and compositions containing them. 4,499,070, Cl. 424-70.000.

Sebestyen, Bela: *See*—
Gergo, Gyorgy; Nemeth, Jozsef; Sebestyen, Bela; and Solymossy, Bela, 4,498,391, Cl. 102-312.000.

Secom Co., Ltd.: *See*—
Sirai, Sirou, 4,499,564, Cl. 367-93.000.

Seddon, Duncan; Mole, Thomas; and Whiteside, Judy A., to Imperial Chemical Industries PLC. Methanol conversion to hydrocarbons with zeolites and cocatalysts. 4,499,314, Cl. 585-408.000.

Seel, Klaus: *See*—
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.

Seeman, Thomas A. Method for producing a glass article. 4,498,918, Cl. 65-25.100.

Seese, Mark A.; and Chiang, Robert L., to W. R. Grace & Co. Co-gel catalyst manufacture. 4,499,197, Cl. 502-65.000.

Segawa, Hideo; Mori, Koji; Itagaki, Masanori; Sakurai, Kohichi; and Ishiwata, Tatsumi, to Ricoch Company, Ltd. Image sensing device. 4,499,384, Cl. 250-578.000.

Seidler, David, to Max Factor & Co. Adjustable product applicator. 4,498,490, Cl. 132-88.500.

Seifried, Walter: *See*—
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Jurgen, 4,499,211, Cl. 521-145.000.

Seiko Instruments & Electronics Ltd.: *See*—
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,498,739, Cl. 350-357.000.

Seisakusho Kabushiki Kaisha Toyoda Jidoshokki: *See*—
Kodama, Ikuo; Muramatsu, Shigeru; Terasaki, Kazunori; and Morita, Takayuki, 4,498,283, Cl. 57-261.000.

Selectiebedrijf Kooi Beheer B.V.: *See*—
Kooi, Hessel; and Meijer, Sjoerd, 4,498,837, Cl. 414-664.000.

Selflevel Covers (Jersey) Limited: *See*—
Ferns, Derek, 4,498,804, Cl. 404-25.000.

SEMIKRON Gesellschaft fur Gleichrichterbau und Elektronik mbH: *See*—
Schierz, Winfried; and Creutz, Helmut, 4,499,485, Cl. 357-74.000.

Senet, Jean-Pierre G.: *See*—
Burgard, Michel; Piteau, Marc D.; Rollat, Alain J.; and Senet, Jean-Pierre G., 4,499,057, Cl. 423-8.000.

Senuma, Akitaka; and Aizawa, Takao, to Union Carbide Corporation. Process and composition for producing open-cell cross linked polyolefin foam. 4,499,210, Cl. 521-91.000.

Sequeira, Joel A.; and Zupon, Michael A., to Schering Corporation. Stable pleasant-tasting albuterol sulfate pharmaceutical formulations. 4,499,108, Cl. 514-653.000.

Serafin, Orest M.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Sericol Group Limited: *See*—
Curtis, John R.; and Renwick, John D., 4,499,175, Cl. 430-253.000.
Curtis, John R.; and Renwick, John D., 4,499,176, Cl. 430-253.000.

Serizawa, Hiroyuki: *See*—
Tanaka, Tsutomu; Tsujimoto, Yoshinobu; Serizawa, Hiroyuki; and Hattori, Katsuji, 4,498,730, Cl. 350-96.160.

Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, to Ayerst, McKenna & Harrison, Inc. 5-Methyl-1-(trifluoromethyl)-2-naphthalenol, process for its preparation and ethers thereof. 4,499,310, Cl. 568-634.000.

Sexton, Robert W.; and Smith, Richard L., to Allis-Chalmers Corp. Evaporative gas treating system. 4,499,031, Cl. 261-66.000.

Seymour, Shaun A.; and Greiner, James G., to Sperry Corporation. Bale unrolling apparatus. 4,498,830, Cl. 414-24.600.

Shaldon, Stanley; Christopherson, Kjell H. I.; Falkvall, Thore E.; and Mattisson, Ulf K., to Gambro Lundia AB. Filtering device. 4,498,990, Cl. 210-637.000.

Shamenko, Stepan P.: *See*—
Toropov, Gennady A.; and Shamenko, Stepan P., 4,498,322, Cl. 72-118.000.

Sharpless, Charles H.: *See*—
Hudson, Robert C.; MacPherson, William F.; and Sharpless, Charles H., 4,499,532, Cl. 363-21.000.

Shaw, Wilfrid G.: *See*—
Paparizos, Christos; Shout, Robert S.; and Shaw, Wilfrid G., 4,499,308, Cl. 568-465.000.

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Bright, Edward J.; Marpoe, Gary R., Jr.; Schuemann, Klaus D.; and Sheesley, Wilmer L., 4,498,725, Cl. 339-176.00M.

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Deal, Carl H.; and Flynn, A. John, 4,498,911, Cl. 55-32.000.
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Hoek, Arend; Post, Martin F. M.; Minderhoud, Johannes K.; and Lednor, Peter W., 4,499,209, Cl. 518-707.000.
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Takahashi, Nobuaki; and Shibamoto, Takeshi, 4,499,506, Cl. 358-343.000.

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Shibley, Paul W. M.: *See*—
Angelov, Georgi; and Shibley, Paul W. M., 4,498,971, Cl. 208-11.0LE.

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Shields, Thomas A., to USM Corporation. Blister package. 4,499,353, Cl. 206-470.000.

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Asano, Hiroshi; Shimamune, Takayuki; and Goto, Toshiki, 4,498,942, Cl. 156-151.000.

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Otala, Matti N., 4,499,431, Cl. 330-296.000.

Shin, Yoon K., to Mercury International Trading Corp. Shoe design. 4,498,251, Cl. 36-30.00R.

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Tsuchiya, Toshiharu; and Iwata, Mamoru, 4,498,415, Cl. 118-712.000.

Shinto Paint Co., Ltd.: *See*—
Kubo, Akira; Ishii, Akihiko; Nishizaki, Ken; and Saito, Tomoharu, 4,499,225, Cl. 524-276.000.

Shioleno, Lewis J., to North American Philips Corporation. High value surface mounted capacitor. 4,499,524, Cl. 361-404.000.

Shiraki, Manabu; Nakajima, Akihiro; and Miyazawa, Takashi, to Sinano Denki Kabushiki Kaisha. Disk type motor speed detecting device. 4,499,420, Cl. 324-174.000.

Shiratori, Masayuki: *See—*
Katsura, Masaki; Harata, Mituo; Takikawa, Osamu; and Shiratori, Masayuki, 4,499,054, Cl. 422-98.000.
Shiroi, Takashi: *See—*
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.
Shive, William, to Clayton Foundation for Research. Assessment of nutritional status of individuals. 4,499,064, Cl. 424-2.000.
Shoji, Akio: *See—*
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Shonley, Ivan T.; and Rock, Orville J. Lifesaver trolling motor mount. 4,498,872, Cl. 440-63.000.
Shout, Robert S.: *See—*
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Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.
Sielaff, Ulrich, to United Steel Products Company. Junction plate. 4,498,800, Cl. 403-172.000.
Siemens Aktiengesellschaft: *See—*
Bruckhoff, Henning, 4,498,332, Cl. 73-40.000.
Eckert, Alfred; Heilmeir, Ernst; and Hempen, Klaus, 4,499,537, Cl. 364-200.000.
Ertl, Wilhelm, 4,498,232, Cl. 29-741.000.
Schneider, Alfred, 4,499,461, Cl. 340-825.030.
Schuss, Werner, 4,498,868, Cl. 433-29.000.
Winzer, Gerhard; and Tomkewitsch, Romuald V., 4,498,731, Cl. 350-96.160.
Sikonia, John G.; and Bennett, Richard W., to UOP Inc. Multiple-stage catalytic reforming with gravity-flowing dissimilar catalyst particles. 4,498,973, Cl. 208-63.000.
Silbering, Steven B.; and Sipos, Tibor, to Johnson & Johnson Products, Inc. Oral compositions comprising N^G-acyl derivatives of arginine. 4,499,067, Cl. 424-52.000.
Silbering, Steven B.; and Sipos, Tibor, to Johnson & Johnson Products, Inc. Oral compositions comprising N^G-alkyl derivatives of arginine. 4,499,068, Cl. 424-52.000.
Silicon Technology Corporation: *See—*
Kachajian, George S.; Steere, Robert E., Jr.; and Charles, Wesley, 4,498,449, Cl. 125-15.000.
Silver, William, to Thomson-Leeds Company Inc. Modular shelf structure. 4,498,593, Cl. 211-49.00D.
Simmonds, Oliver E. Self locking nut including an axially extending reinforcement. 4,498,826, Cl. 411-301.000.
Simms, Charles C., to United States of America, Navy. Retrieval tool for socket contacts. 4,498,233, Cl. 29-747.000.
Simon-Hartley Limited: *See—*
Atkinson, Bernard; Black, Geoffrey M.; Pinches, Anthony; and Lewis, Paul J. S., 4,498,985, Cl. 210-151.000.
Simonsen, Knud: *See—*
Norrie, Lyle W.; Snider, Robert W.; and Simonsen, Knud, 4,498,378, Cl. 99-472.000.
Simonsson, Berit I.: *See—*
Lundin, Claes O. A.; and Simonsson, Berit I., 4,499,250, Cl. 526-209.000.
Simpson Strong-Tie Company, Inc.: *See—*
Gilb, Tyrell T., 4,498,801, Cl. 403-232.100.
Sinano Denki Kabushiki Kaisha: *See—*
Shiraki, Manabu; Nakajima, Akihiro; and Miyazawa, Takashi, 4,499,420, Cl. 324-174.000.
Sinclair, Paul L., to Schlumberger Technology Corporation. Digital induction logging system including means for generating a plurality of transmitter frequencies. 4,499,421, Cl. 324-339.000.
Sinclair, Paul L., to Schlumberger Technology Corporation. Digital induction logging tool including means for compensating for phase shift errors. 4,499,422, Cl. 324-339.000.
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Glore, Thomas G., 4,498,682, Cl. 279-1.00K.
Schneider, George W., Jr, 4,498,346, Cl. 73-861.010.
Sipos, Tibor: *See—*
Silbering, Steven B.; and Sipos, Tibor, 4,499,067, Cl. 424-52.000.
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Sirai, Sirou, to Secom Co., Ltd. Pattern comparison ultrasonic surveillance system with noise suppression. 4,499,564, Cl. 367-93.000.
Sitzmann, Michael E.; and Gilligan, William H., to United States of America, Navy. Derivatives of energetic orthoformates. 4,499,309, Cl. 568-590.000.
Skinner, Christopher A., to Extracorporeal Medical Specialties, Inc. Reverse osmosis water purification system. 4,498,982, Cl. 210-96.200.
Skinner, James L., to Atlantic Richfield Company. Method for deactivating and controlling the dusting tendencies of dried particulate lower rank coal. 4,498,905, Cl. 44-1.00C.
Skjold, A. Christopher; Stover, Lonnie R.; and Trimmer, Robert W., to Miles Laboratories, Inc. Test for esterase activity in a liquid sample. 4,499,185, Cl. 435-19.000.
Skolnick, Saul; and Goodman, Albert, to Southwest Energy Group, Ltd. Energy transfer through a multi-layer liner for shaped charges. 4,498,367, Cl. 86-1.00R.
Skosey, John L.: *See—*
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., 4,499,186, Cl. 435-23.000.
Slavik, William H., to Nuvatec, Inc. Recreational vehicle power control system. 4,499,385, Cl. 307-10.00R.
SMA Controls Inc.: *See—*
Brennan, Albert T., 4,498,820, Cl. 409-179.000.
Smith, Barry L.; Hoelscher, James R.; and Pecit, William A., to General Signal Corporation. Microprocessor based track circuit for occupancy detection and bidirectional code communication. 4,498,650, Cl. 246-122.00R.
Smith, Earnest L. Gourmet hot tamale machine. 4,498,377, Cl. 99-450.700.
Smith, George B., II, to Drug Concentrates, Inc. Openable flexible packet. 4,498,591, Cl. 206-620.000.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; and Ganellin, Charon R., 4,499,101, Cl. 514-374.000.
Smith, Lawrence N., to Sperry Corporation. Method of manufacturing super-conductive tunnel junction devices with precise junction area control. 4,499,119, Cl. 427-63.000.
Smith, Lawrence N.: *See—*
Jillie, Don W., Jr.; and Smith, Lawrence N., 4,498,228, Cl. 29-577.00C.
Smith, Paul R., to General Motors Corporation. Electro-optical method and apparatus for measuring the fit of adjacent surfaces. 4,498,776, Cl. 356-375.000.
Smith, Paul R.; and Froes, Francis H., to United States of America, Air Force. Titanium metal-matrix composites. 4,499,156, Cl. 428-614.000.
Smith, Richard L.: *See—*
Sexton, Robert W.; and Smith, Richard L., 4,499,031, Cl. 261-66.000.
Smith, Robert J., to Lucas Industries public limited Company. Dual brake valves. 4,498,710, Cl. 303-6.00R.
Smith, Robert L.: *See—*
Raba, Carl F., Jr.; Smith, Robert L.; and Huang, Francis Y., 4,498,993, Cl. 210-710.000.
Smith, Robert N., to Philip Morris Incorporated. Tobacco bale steam injection. 4,498,486, Cl. 131-300.000.
Smith, Stanley, to Rolls-Royce Limited. Fuel/oil heat exchange system for an engine. 4,498,525, Cl. 165-39.000.
Snap-on Tools Corporation: *See—*
Bendickson, Roy B.; and Wridt, Alfred A., 4,498,244, Cl. 33-203.150.
Snapper Power Equipment, Division of Fuqua Industries, Inc.: *See—*
Rouse, Russell V., 4,498,552, Cl. 180-70.100.
Snavely, Earl S., Jr.: *See—*
Jones, Timothy A.; and Snavely, Earl S., Jr., 4,499,059, Cl. 423-226.000.
Snider, Robert W.: *See—*
Norrie, Lyle W.; Snider, Robert W.; and Simonsen, Knud, 4,498,378, Cl. 99-472.000.
Snow, Craig A.: *See—*
Dickinson, Robert V.; Galie, Louis M.; and Snow, Craig A., 4,499,553, Cl. 364-900.000.
Soca, Serge: *See—*
Favreau, Michel; Bajon, Jean; and Soca, Serge, 4,499,486, Cl. 358-37.000.
Societa' Cavi Pirelli S.p.A.: *See—*
Lanfranconi, Gianmario; and Monti, Giuseppe, 4,498,812, Cl. 405-168.000.
Societe Anonyme Dite "Manufacture de Produits Chimiques Protex": *See—*
Tesson, Gerard; and Joseph, Christian, 4,499,246, Cl. 525-486.000.
Societe Cortial, S.A.: *See—*
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,499,090, Cl. 514-210.000.
Societe des Ateliers de Construction: *See—*
Haulotte, Georges, 4,498,596, Cl. 212-189.000.
Societe D'Etudes Scientifiques et Industrielles de l'Ile de France: *See—*
Thominet, Michel L.; and Perrot, Jacques J., 4,499,019, Cl. 514-428.000.
Societe d'Exploitation des Machines Dubuit: *See—*
Rouly, Eric; and Douville, Jean-Pierre, 4,498,386, Cl. 101-40.000.
Societe ECA: *See—*
Darche, Michel J. P.; and Carlqvist, Stig, 4,498,297, Cl. 60-525.000.
Societe Francaise des Produits pour Catalyse Pro-Catalyse: *See—*
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,499,203, Cl. 502-247.000.
Societe Nationale des Poudres et Explosifs: *See—*
Burgard, Michel; Piteau, Marc D.; Rollat, Alain J.; and Senet, Jean-Pierre G., 4,499,057, Cl. 423-8.000.
Societe S.O.M.A.V.I.: *See—*
Pera, Jean; and Pera, Didier, 4,498,382, Cl. 100-117.000.
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Portmann, Albert, 4,499,346, Cl. 200-67.00D.
Soennichsen, Rolf. Splicing apparatus for cross-flute corrugated board. 4,498,949, Cl. 156-462.000.
Sofranko, John A.: *See—*
Jones, C. Andrew; and Sofranko, John A., 4,499,322, Cl. 585-500.000.
Solir Corporation: *See—*
Diba, Keyvan T., 4,498,822, Cl. 410-2.000.
Solmat Systems, Ltd.: *See—*
Assaf, Gad; and Doron, Benjamin, 4,498,300, Cl. 60-641.800.
Solodovnikov, Sergei A.: *See—*
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.;

Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Solomon, Stephen R.: *See—*
Del Tufo, Mark J.; Lake, Ralph J., Jr.; and Solomon, Stephen R., 4,498,802, Cl. 403-300.000.

Solvay & Cie (Societe Anonyme): *See—*
Obsomer, Marc, 4,499,045, Cl. 264-532.000.

Solymossy, Bela: *See—*
Gergo, Gyorgy; Nemeth, Jozsef; Sebestyen, Bela; and Solymossy, Bela, 4,498,391, Cl. 102-312.000.

Somerikko, Aarni: *See—*
Peltonen, Eero; Somerikko, Aarni; and Viitanen, Timo, 4,498,338, Cl. 73-432.00R.

Somfy: *See—*
Jacquel, Dominique, 4,499,463, Cl. 340-825.520.

Sony Corporation: *See—*
Gohda, Seiichi; and Ishiguro, Mamoru, 4,499,509, Cl. 360-72.100.
Shimada, Toshiyuki, 4,499,454, Cl. 340-347.0DD.

Soper, Louis H. Solar heating panel. 4,498,458, Cl. 126-429.000.

Sorelec: *See—*
Djelouah, Salah, 4,498,302, Cl. 60-671.000.

Sortwell, Edwin T., to Diachem Industries, Inc. Method of rapidly dissolving polymers in water. 4,499,214, Cl. 523-336.000.

Sou, Teho. Bottom box for pet cage. 4,498,422, Cl. 119-17.000.

Southgate, Peter D.; Fairbanks, David W.; Davis, Richard B.; and Beltz, John P., to RCA Corporation. Automatic stripe width reader. 4,498,779, Cl. 356-384.000.

Southwest Energy Group, Ltd.: *See—*
Skolnick, Saul; and Goodman, Albert, 4,498,367, Cl. 86-1.00R.

Spain, Raymond G.; and Massie, James E., to Hitco. Method and resin solution for splicing carbonized polyacrylonitrile material. 4,499,216, Cl. 523-437.000.

Spear, Gregory T.: *See—*
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., 4,499,186, Cl. 435-23.000.

Spearhead Industries, Inc.: *See—*
Margolis, Mark D., 4,498,199, Cl. 2-69.000.

Spector, George: *See—*
Turpin, Robert, Sr.; and Spector, George, 4,499,456, Cl. 340-576.000.

Speller, David J.: *See—*
Ross, Richard J.; and Speller, David J., 4,498,536, Cl. 166-250.000.

Sperry Corporation: *See—*
Duncan, Damon H., 4,498,340, Cl. 73-504.000.
Jillie, Don W., Jr.; and Smith, Lawrence N., 4,498,228, Cl. 29-577.00C.
Peterson, Thomas D., 4,498,546, Cl. 174-35.00R.
Rao, Basrur R., 4,499,473, Cl. 343-754.000.
Sadler, Loren G., 4,498,630, Cl. 239-677.000.
Seymour, Shaun A.; and Greiner, James G., 4,498,830, Cl. 414-24.600.
Smith, Lawrence N., 4,499,119, Cl. 427-63.000.

Spicer, Leonard D.; Bennett, Dennis W.; and Davis, Jon F., to United States of America, Energy. Method of detecting sulfur dioxide. 4,499,190, Cl. 436-122.000.

Spiertz, Elisabeth J.: *See—*
Vollenbroek, Franciscus A.; and Spiertz, Elisabeth J., 4,499,177, Cl. 430-311.000.

Spikes, Warren W. Big bale retriever and stacker. 4,498,829, Cl. 414-24.500.

Spiro, Clifford L.; and Lamby, Edward J., to General Electric Company. Water soluble resols and method for producing them. 4,499,311, Cl. 568-660.000.

Spohn, Ralph J.: *See—*
Liu, Huei-Cheng; and Spohn, Ralph J., 4,499,317, Cl. 585-438.000.

Sprague, Peter W.; and Heikes, James E., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane prostaglandin intermediates and method for preparing same. 4,499,292, Cl. 549-459.000.

Springstead, Thomas H.: *See—*
Kent, Gary D.; Intorp, Norbert B.; and Springstead, Thomas H., 4,498,935, Cl. 148-6.15Z.

SRI International: *See—*
Rambo, William R., 4,499,606, Cl. 455-277.000.

Stacey, Joseph M., to United States of America, National Aeronautics and Space Administration. Method of measuring sea surface water temperature with a satellite including wideband passive synthetic-aperture multichannel receiver. 4,499,470, Cl. 343-352.000.

Stahly, Barbara C.; and Stahly, G. Patrick, to Ethyl Corporation. Nucleophilic substitution process. 4,499,026, Cl. 260-465.00R.

Stahly, G. Patrick: *See—*
Stahly, Barbara C.; and Stahly, G. Patrick, 4,499,026, Cl. 260-465.00R.

Stal-Laval Turbin AB: *See—*
Brannstrom, Roine; and Kreij, Sven-Erik, 4,498,286, Cl. 60-39.100.
Kreij, Sven-Erik, 4,498,285, Cl. 60-39.100.

Stallard, Paul: *See—*
Worwood, Bryan H.; and Stallard, Paul, 4,498,495, Cl. 137-557.000.

Stamicarbon B.V.: *See—*
Loontjens, Jacobus A., 4,499,242, Cl. 525-289.000.

Standard Oil Company, The: *See—*
Paparizos, Christos; Shout, Robert S.; and Shaw, Wilfrid G., 4,499,308, Cl. 568-465.000.

Standard Oil Company (Indiana): *See—*
Klotz, Marvin R.; and Peters, Edwin F., 4,499,325, Cl. 585-671.000.
Melquist, John L., 4,499,326, Cl. 585-671.000.

Stanland, Andrew J.: *See—*
Chamberland, Roger R.; and Stanland, Andrew J., 4,498,491, Cl. 137-72.000.

Stant Inc.: *See—*
Harris, Robert S., 4,498,493, Cl. 137-469.000.

Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M. Resistance welding apparatus for joining pipes end to end. 4,499,364, Cl. 219-161.000.

Stearns Manufacturing Company: *See—*
Evert, Karla R., 4,498,882, Cl. 441-116.000.

Steelcase Inc.: *See—*
Raftery, William B., 4,498,702, Cl. 297-312.000.

Steenhoek, Larry E.: *See—*
Yeung, Edward E.; Steenhoek, Larry E.; Woodruff, Steven D.; and Kuo, Jeng-Chung, 4,498,774, Cl. 356-368.000.

Steere, Robert E., Jr.: *See—*
Kachajian, George S.; Steere, Robert E., Jr.; and Charles, Wesley, 4,498,449, Cl. 125-15.000.

Steiner, Alois, to Sulzer-Ruti Machinery Works Ltd. Multiple longitudinal traversing shed weaving machine containing a weaving rotor. 4,498,501, Cl. 139-28.000.

Steinke, Hermann O.; Steinke, Roland; and Vornfett, Karl-Ulrich, to Justus Technik GmbH Industrie-Anlagen. Apparatus for cutting through rod or strand-like products. 4,498,362, Cl. 83-304.000.

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Steinke, Hermann O.; Steinke, Roland; and Vornfett, Karl-Ulrich, 4,498,362, Cl. 83-304.000.

Steinmetz, Anthony; Arnold, Jacobus J.; Verweg, Fransiscus G. C.; and Groeneboer, Hendrik, to U.S. Philips Corporation. Electric connecting means. 4,498,727, Cl. 339-278.00C.

Stephen, George, Jr.: *See—*
Schlosser, Erich J.; and Stephen, George, Jr., 4,498,452, Cl. 126-9.00R.

Sterling Drug Inc.: *See—*
Wentland, Mark P.; and Bailey, Denis M., 4,499,091, Cl. 514-254.000.

Stern, Max H.: *See—*
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,499,304, Cl. 564-92.000.

Steudle, Ernst W., to U.S. Properties Inc. Mounting bracket assembly for fishing reels. 4,498,641, Cl. 242-106.000.

Stevens, Aaron A.; and Lawrence, Randall K., to Murray Ohio Manufacturing Co., The. Variator drive system. 4,498,889, Cl. 474-133.000.

Stewart, Biven. Reversible housing for evaporative cooler. 4,499,030, Cl. 261-3.000.

Stewart, Raymond S.: *See—*
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,150, Cl. 428-447.000.
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,151, Cl. 428-447.000.

Still, David W.; and Economopoulos, Peter C., to Honeywell Information Systems Inc. Programmable logic array with dynamic test capability in the unprogrammed state. 4,499,579, Cl. 371-15.000.

Stirbis, James S., to Adolph Coors Company. Cam assembly for skip-print mandrel wheel assembly. 4,498,387, Cl. 101-40.000.

Stock, Hugh J., to Pacer Technology and Resources, Inc. Dropper for cyanoacrylate adhesives. 4,498,609, Cl. 222-420.000.

Stockel, Richard F.; and Jelling, Murray. Anti-microbial compositions and associated methods for preparing the same and for the disinfecting of various objects. 4,499,077, Cl. 424-149.000.

Stoesser, Klaus; and Vinson, Heinz, to Battelle Institut e.V. Circuit arrangement for the electronic code locking of locks. 4,499,462, Cl. 340-825.310.

Stokes, Robert B.; Yen, Kuo-Hsiung; Lau, Kei-Fung; Kagiwada, Reynold S.; and Delaney, Michael J., to TRW Inc. Surface acoustic wave spectrum analyzer. 4,499,393, Cl. 310-313.00A.

Stone, Anthony B.: *See—*
Turner, Robert C.; Stone, Anthony B.; and Holman, Rury R., 4,498,904, Cl. 604-211.000.

Stover, Johannes H.; and Van Leeuwen, Johannes A., to U.S. Philips Corporation. Method of manufacturing a display tube. 4,498,884, Cl. 445-45.000.

Stover, Lonnie R.: *See—*
Skjold, A. Christopher; Stover, Lonnie R.; and Trimmer, Robert W., 4,499,185, Cl. 435-19.000.

Strammello, Peter, to Zenith Electronics Corporation. Switching diplexer for single antenna input television receivers. 4,499,495, Cl. 358-188.000.

Stratoflex, Inc.: *See—*
Cooke, Horise M., 4,498,691, Cl. 285-12.000.

Strausheim, Myron A., to American Desk Mfg. Co. Adjustable divider strip mounting for plastic trays. 4,499,128, Cl. 428-35.000.

Stricklin, Douglas K.: *See—*
Young, Roy E.; Stricklin, Douglas K.; and Givens, Henry M. W., 4,498,554, Cl. 180-236.000.

Subrick, Joseph: *See—*
Korpela, Thomas; and Subrick, Joseph, 4,498,816, Cl. 405-259.000.

Sugaya, Toshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. System for detecting position of a read-write head in seek operation on a disk memory having data servo spectors. 4,499,511, Cl. 360-78.000.

Sugihara, Atsushi: *See*—
Suzuki, Masamichi; Sugihara, Atsushi; Sano, Tadaaki; and Suzuki, Toshihiro, 4,499,123, Cl. 427-282.000.

Sugimoto, Yasuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Variable gain control circuit. 4,499,429, Cl. 330-254.000.

Suginaka, Shunji: *See*—
Watanabe, Kazumasa; Deguchi, Hidetaka; and Suginaka, Shunji, 4,499,181, Cl. 430-558.000.

Sugiyama, Hiroyuki; Abe, Ryozo; and Yoshihara, Kenji, to Victor Company of Japan, Ltd. Apparatus for playing back video signals recorded on a rotary recording medium on several quasi-slow motion reproduction modes. 4,499,505, Cl. 358-342.000.

Sugiyama, Takashi, to Minolta Camera Kabushiki Kaisha. Blade cleaning apparatus. 4,498,760, Cl. 355-15.000.

Sugiyama, Terumasa: *See*—
Takahashi, Izumi; Nakayama, Kenichiro; Sugiyama, Terumasa; and Suzuki, Takanobu, 4,499,580, Cl. 371-17.000.

Sujansky, Daniel J.; and Rancourt, Martha W., to Ortho Diagnostic Systems Inc. Detecting intracellular antigens in swelled and fixed cells with labeled antibody. 4,499,183, Cl. 435-6.000.

Sullair Technology AB: *See*—
Schibbye, (Lars) Lauritz B.; and Englund, Rolf A., 4,498,849, Cl. 417-299.000.

Sulzer-Ruti Machinery Works Ltd.: *See*—
Steiner, Alois, 4,498,501, Cl. 139-28.000.

Sumitomo Bakelite Company Limited: *See*—
Yanagida, Tomomi; Ajiki, Mitunori; and Suzuki, Shigeru, 4,499,145, Cl. 428-418.000.

Sumitomo Chemical Company, Limited: *See*—
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.
Kadokura, Hidekimi; and Umezaki, Hiroshi, 4,498,931, Cl. 106-307.000.
Sato, Hiroshi; Ishii, Norio; and Nakamura, Shyuzo, 4,499,321, Cl. 585-486.000.

Sumner, John H.: *See*—
Allen, Danny H.; and Sumner, John H., 4,498,504, Cl. 139-302.000.

Sun Chemical Corporation: *See*—
Mattis, Donald J., 4,498,726, Cl. 339-182.00R.

Sunami, Hideo: *See*—
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.

Sunkara, Sai P.; and Prakash, Nellikunja J., to Merrell Dow Pharmaceuticals Inc. Process for treating diseases with ODC inhibitors. 4,499,072, Cl. 424-85.000.

Sunkist Growers, Inc.: *See*—
Miller, Dennis H.; and Mutka, Jerry R., 4,499,112, Cl. 426-276.000.

Sutherland, George H., to General Electric Company. Fixed track chain drive. 4,498,890, Cl. 474-140.000.

Sutherland, Robert L., to Federal Paper Board Co., Inc. Lock arrangement between two carton closure panels. 4,498,618, Cl. 229-40.000.

Suzansky, Vasily G.: *See*—
Lyakhevich, Genrikh D.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,499,218, Cl. 524-79.000.

Suzuki, Masami: *See*—
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.

Suzuki, Masamichi; Sugihara, Atsushi; Sano, Tadaaki; and Suzuki, Toshihiro, to Alcan International Limited. Process for coating aluminum with zinc. 4,499,123, Cl. 427-282.000.

Suzuki, Masayuki; Yamamichi, Masayoshi; and Ohara, Tsunemasa, to Canon Kabushiki Kaisha. Light shielding device in single lens reflex camera. 4,498,750, Cl. 354-154.000.

Suzuki, Norimoto; and Inoue, Shunji, to Dai Nippon Insatsu Kabushiki Kaisha. Plastic relief card having metallic luster. 4,499,126, Cl. 428-13.000.

Suzuki, Shigeru: *See*—
Yanagida, Tomomi; Ajiki, Mitunori; and Suzuki, Shigeru, 4,499,145, Cl. 428-418.000.

Suzuki, Takanobu: *See*—
Takahashi, Izumi; Nakayama, Kenichiro; Sugiyama, Terumasa; and Suzuki, Takanobu, 4,499,580, Cl. 371-17.000.

Suzuki, Tomio; and Morimoto, Kotaro, to Kobe Steel, Limited. Method for controlling combustion in industrial furnaces. 4,498,861, Cl. 431-12.000.

Suzuki, Toshihiro: *See*—
Suzuki, Masamichi; Sugihara, Atsushi; Sano, Tadaaki; and Suzuki, Toshihiro, 4,499,123, Cl. 427-282.000.

Suzuki, Tsutomu, to Pioneer Electronic Corporation. Video format signal recording and reproduction system. 4,499,503, Cl. 358-316.000.

Suzuki, Yasutoshi; Hara, Kunihiko; and Sato, Ryo, to Nippondenso Co., Ltd. Mirror. 4,499,451, Cl. 340-98.000.

Suzuki, Yoshihisa; Yasui, Yoshiharu; and Takasu, Shigeru, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Drafting apparatus in a spinning frame. 4,498,216, Cl. 19-244.000.

Suzuki, Yuichi: *See*—
Watanabe, Yasushi; Suzuki, Yuichi; Nagata, Yukihiro; and Hoshino, Kiyotaka, 4,498,519, Cl. 164-417.000.

Suzuki, Yukio: *See*—
Sakamaki, Hiroshi; and Suzuki, Yukio, 4,498,853, Cl. 418-268.000.

Suzuno, Yoshiro: *See*—
Ohkoshi, Masayoshi; and Suzuno, Yoshiro, 4,498,437, Cl. 123-373.000.

Sveinsbo, Gunnar: *See*—
Gismervik, Jan E.; and Sveinsbo, Gunnar, 4,499,348, Cl. 200-84.00C.

Swanson, Arthur P. Golf club. 4,498,673, Cl. 273-172.000.

Swanson, Mervin D. Penetration seal. 4,498,692, Cl. 285-20.000.

Swanson, Roy T., to S&C Electric Company. Pressure-operated switch for a high-voltage interrupting module. 4,499,446, Cl. 337-30.000.

Swiss Aluminium Ltd.: *See*—
Bjarnason, Gudmundur; and Eggertsson, Thorsteinn, 4,498,818, Cl. 406-137.000.
Paulet, Jean-Francois; and Eisenlohr, Othmar, 4,498,967, Cl. 204-272.000.

Syntex (U.S.A.) Inc.: *See*—
Kluge, Arthur F.; and Clark, Robin D., 4,499,100, Cl. 514-321.000.

Szabo, Steve B.: *See*—
Wells, Calvin G.; and Szabo, Steve B., 4,498,709, Cl. 301-5.0VH.

Szolgyen, Csaba: *See*—
Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.

Szonnell, Henry H. Beach erosion prevention jetty configuration. 4,498,806, Cl. 405-34.000.

T.A.D. Avanti, Inc.: *See*—
Lyle, Stephen V., 4,499,335, Cl. 179-6.030.

Tabereaux, Alton T., to Reynolds Metals Company. Alumina reduction cell. 4,498,966, Cl. 204-243.00R.

Taboola Pty. Ltd.: *See*—
Preddey, Brian F.; and Mills, Laurence P., 4,498,327, Cl. 72-341.000.

Tabuchi, Kenji; Shida, Masami; and Ishii, Toshio, to Hitachi, Ltd. Method of controlling engine. 4,498,444, Cl. 123-478.000.

Tachibana, Kunitaka: *See*—
Minowa, Nobuto; Fukatsu, Shunzo; Tachibana, Kunitaka; Niida, Taro; and Mase, Sadaaki, 4,499,027, Cl. 260-502.50G.

Tacke, Peter; Korber, Helmut; Merten, Josef; and Neuray, Dieter, to Bayer Aktiengesellschaft. Polycarbonate-polyolefin moulding compositions. 4,499,237, Cl. 525-67.000.

Tada, Sugihiko: *See*—
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.

Tadokoro, Eiichi: *See*—
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.

Takada, Juichiro. Drive device for passive vehicle occupant restraint belt system. 4,498,690, Cl. 280-804.000.

Takahashi, Izumi; Nakayama, Kenichiro; Sugiyama, Terumasa; and Suzuki, Takanobu, to Fuji Xerox Co., Ltd. Output check apparatus for electrophotographic copier. 4,499,580, Cl. 371-17.000.

Takahashi, Nobuaki; and Shibamoto, Takeshi, to Victor Company of Japan, Ltd. Video signal recording and/or reproducing system. 4,499,506, Cl. 358-343.000.

Takahashi, Yonosuke: *See*—
Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, 4,499,178, Cl. 430-495.000.

Takami, Toru: *See*—
Ohashi, Hiroyuki; Ohara, Ikuo; and Takami, Toru, 4,499,076, Cl. 424-143.000.

Takasu, Shigeru: *See*—
Suzuki, Yoshihisa; Yasui, Yoshiharu; and Takasu, Shigeru, 4,498,216, Cl. 19-244.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,499,088, Cl. 514-202.000.

Takatori, Yasushi; Yano, Yasuhiro; and Hattori, Yoshifumi, to Canon Kabushiki Kaisha. Liquid jet recording device. 4,499,480, Cl. 346-140.00R.

Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,499,088, Cl. 514-202.000.

Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, to Canon Kabushiki Kaisha. Camera operable with flash and in daylight and tungsten modes. 4,499,487, Cl. 358-41.000.

Takeda, Susumu; Mann, Allen W.; Goodrich, David G.; and Zinniger, Theodore C., to Kaiser Aluminum & Chemical Corporation. Molten metal level control in continuous casting. 4,498,521, Cl. 164-453.000.

Takekawa, Hiroshi: *See*—
Banno, Taiichi; Hijikata, Kazuo; and Takekawa, Hiroshi, 4,498,780, Cl. 356-414.000.

Takeya, Yasushi: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.

Takezawa, Shoichiro: *See*—
Murakami, Yoichi; Shoji, Akio; Takezawa, Shoichiro; Ishikawa, Noboru; and Morita, Toshiaki, 4,499,239, Cl. 525-111.000.

Taki, Yoshihiro: *See*—
Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, 4,498,989, Cl. 210-450.000.

Takikawa, Osamu: *See*—
Katsura, Masaki; Harata, Mituo; Takikawa, Osamu; and Shiratori, Masayuki, 4,499,054, Cl. 422-98.000.

Talke, Frank E.: *See*—
Chee-Shuen Lee, Francis; Mills, Ross N.; and Talke, Frank E., 4,499,479, Cl. 346-140.00R.

Tamura, Koichi, to Tokico Ltd. Disc brake subassembly having friction pad retaining means. 4,498,564, Cl. 188-73.320.
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, to Hitachi, Ltd. Method of manufacturing single-crystal film. 4,498,951, Cl. 156-612.000.
Tanaka, Hideo: *See*—
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.
Tanaka, Hiroaki; and Akita, Shigeyuki, to Nippon Soken, Inc. Capacitive-type incremental and reference angular rotation detecting apparatus. 4,499,465, Cl. 340-870.370.
Tanaka, John S. Smoke mask. 4,498,472, Cl. 128-205.170.
Tanaka, Masayuki: *See*—
Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, 4,498,891, Cl. 474-205.000.
Tanaka, Megumu: *See*—
Akita, Shinji; and Tanaka, Megumu, 4,498,324, Cl. 72-208.000.
Tanaka, Munekazu: *See*—
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; and Tanaka, Munekazu, 4,499,252, Cl. 528-38.000.
Tanaka, Naoki: *See*—
Imanishi, Masami; and Tanaka, Naoki, 4,498,310, Cl. 62-211.000.
Tanaka, Nobuyasu; Ohashi, Mitunari; and Iwamoto, Shohzoh, to Fuji Electric Co., Ltd. Commodity rack for automatic vending machines. 4,498,569, Cl. 193-27.000.
Tanaka, Nobuyoshi; and Kinoshita, Takao, to Canon Kabushiki Kaisha. Solid state image sensing device. 4,499,496, Cl. 358-213.000.
Tanaka, Norio: *See*—
Fujii, Takayuki; and Tanaka, Norio, 4,498,700, Cl. 296-78.100.
Tanaka, Shigeo: *See*—
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.
Tanaka, Toshiaki; Fukai, Masao; Onuma, Tatsuro; and Kinoshita, Ryohei, to Fujitsu Limited. Item input device for a data processing system. 4,498,256, Cl. 40-475.000.
Tanaka, Toyomi: *See*—
Kojima, Katsuhiko; Tanaka, Toyomi; and Nakajima, Shigeo, 4,498,509, Cl. 141-10.000.
Tanaka, Tsuneo: *See*—
Nakamura, Yukio; and Tanaka, Tsuneo, 4,499,136, Cl. 428-206.000.
Tanaka, Tsutomu; Tsujimoto, Yoshinobu; Serizawa, Hiroyuki; and Hattori, Katsuji, to Matsushita Electric Industrial Co., Ltd. Optical switching device. 4,498,730, Cl. 350-96.160.
Tani, Katsuya: *See*—
Saitoh, Minoru; Arimatsu, Yoshikazu; Tani, Katsuya; and Mitamura, Hideyuki, 4,499,221, Cl. 524-109.000.
Tanikawa, Shoji: *See*—
Enomoto, Ryo; Yamauchi, Hidetoshi; and Tanikawa, Shoji, 4,499,147, Cl. 428-428.000.
Tanino, Katsumi; Fujiki, Satoshi; and Okamoto, Shinzi, to Toyama Prefecture; and Hokuriku Electric Industry Co., Ltd. Conductive paint. 4,499,010, Cl. 252-512.000.
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, to Fujitsu Limited. Integrated circuit manufactured by master slice method. 4,499,484, Cl. 357-68.000.
Tank, Gene F.; Dawson, Samuel O.; and Barnett, Phillip R., to Nordson Corporation. Apparatus for filtering air for a powder spray booth. 4,498,913, Cl. 55-356.000.
Tarnay, Denes, to General Electric Company. Lamp unit having glass reflector member with recessed base end. 4,499,526, Cl. 362-263.000.
Tartar, Andre: *See*—
Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, 4,499,080, Cl. 514-12.000.
Tatara, Yoshikuni, to Ricoh Company, Ltd. Semiautomatic paper setting system. 4,498,795, Cl. 400-637.100.
Tauber, Richard J.; and Rosborg, Daniel J., to Cooper Industries, Inc. Airport runway/taxiway edge light fixture. 4,499,527, Cl. 362-267.000.
Tauschel, Horst-Dietmar: *See*—
Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.
Tawada, Yoshihisa: *See*—
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, 4,499,331, Cl. 136-258.000.
Taylor, Henry D.: *See*—
Breeden, Robert H.; and Taylor, Henry D., 4,498,370, Cl. 91-171.000.
Techmark Corporation: *See*—
Roth, Reinhold C.; and Terra, Richard F., 4,498,864, Cl. 432-8.000.
Techne Corporation: *See*—
de Bruyne, Norman A., 4,498,785, Cl. 366-274.000.
Technical Arts Corporation: *See*—
White, Steven J., 4,498,778, Cl. 356-376.000.
Teijin Limited: *See*—
Sasaki, Hideharu; and Shimada, Keizo, 4,498,957, Cl. 162-146.000.
Teijin Seiki Company, Limited: *See*—
Yamamoto, Shigeru; Miyake, Yuzuru; and Nohara, Isao, 4,498,637, Cl. 242-18.100.
Tektronix, Inc.: *See*—
Eriksen, Joern B.; and Radochonski, Pierre, 4,499,501, Cl. 358-302.000.
Schlotzhauer, Kenneth G.; and Metz, Arthur J., 4,499,386, Cl. 307-260.000.
Tel Aviv University: *See*—
Kosower, Edward M.; Pazhenchevsky, Barak; and Hershkowitz, Eli, 4,499,284, Cl. 548-359.000.
Teletype Corporation: *See*—
McGovern, William E.; and Tsao, Kuey Y., 4,498,767, Cl. 356-121.000.
Tellis, Cyril B.: *See*—
Garska, Daniel C.; and Tellis, Cyril B., 4,499,316, Cl. 585-415.000.
Temme, Karl; Beckschafer, Klaus; and Pruller, Helmut, to Carl Kurt Walther GmbH & Co. KG. Vibratory container for flocculation of the waste water obtained upon vibratory abrasive finishing. 4,498,986, Cl. 210-199.000.
TenBarge, John S.: *See*—
Mackal, Glenn H.; and TenBarge, John S., 4,498,605, Cl. 222-5.000.
Tendler, Robert K. Wall hanger. 4,498,655, Cl. 248-467.000.
Teng, Chuan C., to Dailey Petroleum Services Corp. Well jar incorporating elongate resilient vibration snubbers and mounting apparatus therefor. 4,498,548, Cl. 175-299.000.
Tenold, Robert A., to Cutter Laboratories, Inc. Intravenously injectable immune serum globulin. 4,499,073, Cl. 424-85.000.
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., to University of Illinois, Board of Trustees. Diagnosing autoimmune rheumatoid arthritis by measuring proteolytic activity of α_2-macroglobulin. 4,499,186, Cl. 435-23.000.
Terasaki, Kazunori: *See*—
Kodama, Ikuo; Muramatsu, Shigeru; Terasaki, Kazunori; and Morita, Takayuki, 4,498,283, Cl. 57-261.000.
Terminal Data Corporation: *See*—
Therien, Robert D.; Langford, Forrest L.; Motamed, Armond; and Williams, Robert D., 4,498,761, Cl. 355-24.000.
Terra, Richard F.: *See*—
Roth, Reinhold C.; and Terra, Richard F., 4,498,864, Cl. 432-8.000.
Teschendorf, Hans-Juergen: *See*—
Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, 4,499,087, Cl. 514-211.000.
Tesson, Gerard; and Joseph, Christian, to Societe Anonyme Dite "Manufacture de Produits Chimiques Protex". Epoxy resins containing as a latent catalyst/accelerator halogenobisphenates of tertiary amines. 4,499,246, Cl. 525-486.000.
Testa, Raymond T.: *See*—
Lee, May D.; Martin, John H.; Borders, Donald B.; Yao, Raymond C.; and Testa, Raymond T., 4,499,075, Cl. 424-118.000.
Tetenbaum, Marvin T.; and Crowley, Burlon C., to NL Industries, Inc. Water dispersible, modified polyurethane and a thickened aqueous composition containing it. 4,499,233, Cl. 524-591.000.
Texaco Canada Resources Ltd.: *See*—
Bialek, Rene F., 4,498,958, Cl. 196-46.000.
Texaco Inc.: *See*—
Dominguez, Richard J. G.; McEntire, Edward E.; and Naylor, Carter G., 4,499,254, Cl. 528-49.000.
Helms, David A.; Hatton, Gregory J.; and Williams, Thomas M., 4,499,418, Cl. 324-58.50A.
McDaniel, Kenneth G., 4,499,264, Cl. 536-50.000.
Texas Instruments Incorporated: *See*—
Dyer, Lawrence D.; and McGregor, Anderson D., 4,498,345, Cl. 73-849.000.
Fischer, Georg, 4,498,574, Cl. 198-380.000.
Gilbert, Don M., 4,498,791, Cl. 400-124.000.
Lisauskas, Richard J., 4,499,517, Cl. 361-24.000.
Textron Inc.: *See*—
Chaplin, John B.; and Ganczak, Edward G., 4,498,873, Cl. 440-82.000.
Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft: *See*—
Wohlgemuth, Werner, 4,498,315, Cl. 66-121.000.
Therien, Robert D.; Langford, Forrest L.; Motamed, Armond; and Williams, Robert D., to Terminal Data Corporation. Cine-mode camera. 4,498,761, Cl. 355-24.000.
Thielen, Gerd: *See*—
Gerarts, Wilhelm; Thielen, Gerd; and Derichs, Eberhard, 4,498,527, Cl. 165-89.000.
Thiokol Corporation: *See*—
White, C. Max, 4,498,292, Cl. 60-256.000.
Thom, Elmar: *See*—
Fischer, Willy G.; and Thom, Elmar, 4,498,842, Cl. 416-155.000.
Thoma, Peter, to Maag Gear-Wheel & Machine Company Limited. Control arrangement for a gear testing machine. 4,498,335, Cl. 73-162.000.
Thomas, John M.: *See*—
Ballantine, James A.; Purnell, John H.; and Thomas, John M., 4,499,319, Cl. 585-467.000.
Thomas, Robert T.: *See*—
Frost, Paul T.; and Thomas, Robert T., 4,499,376, Cl. 250-341.000.
Thomas, Stephen J.: *See*—
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,150, Cl. 428-447.000.
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,151, Cl. 428-447.000.
Thominet, Michel L.; and Perrot, Jacques J., to Societe D'Etudes Scientifiques et Industrielles de l'Ile de France. N-(1-allyl-2-pyrrolidylmethyl)-2,3-dimethoxy-5-sulfamoylbenzamide and derivatives thereof and method for treating hot flushes associated with natural or surgical menopause. 4,499,019, Cl. 514-428.000.

Thompson, Craig D., to Minnesota Mining and Manufacturing Company. Cable tie. 4,498,507, Cl. 140-93.200.
Thompson, William J., to Rockwell International Corporation. PLL Phase error alarm related to associated receiver. 4,499,434, Cl. 331-17.000.
Thomson-CSF: *See*—
Favreau, Michel; Bajon, Jean; and Soca, Serge, 4,499,486, Cl. 358-37.000.
Le Berre, Serge; and Hareng, Michel, 4,499,458, Cl. 340-713.000.
Thomson, David W.; and Trimble, Donald E., to Harris Corporation. System for linearizing sweep of voltage controlled oscillator. 4,499,435, Cl. 331-44.000.
Thomson-Leeds Company Inc.: *See*—
Silver, William, 4,498,593, Cl. 211-49.00D.
Thoni, Werner; Huber, Peter; and Hohenegger, Karl, to Balzers Aktiengesellschaft. Optical element. 4,498,728, Cl. 350-1.700.
Thut, Robert S.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.
Thysen, Albert A. P.; and Timmermans, Gilbert L. J., to ITT Industries, Inc. Laundry handling machine, rotational speed reduction arrangement and rinsing device. 4,498,317, Cl. 68-12.00R.
Thyssen Industrie AG: *See*—
Piepenbreier, Ernst, 4,498,562, Cl. 188-58.000.
Timian, Steven S.: *See*—
Moody, Roy A.; Bulanda, John J.; Levin, Robert F.; Timian, Steven S.; and Waltasti, Stephen A., 4,498,506, Cl. 140-93.200.
Timmermans, Gilbert L. J.: *See*—
Thysen, Albert A. P.; and Timmermans, Gilbert L. J., 4,498,317, Cl. 68-12.00R.
Tissot, Raymond, to Robert Bosch GmbH. Fuel injection pump. 4,498,442, Cl. 123-447.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Okumura, Yoshiharu; Kamiyama, Setsuo; Hosokawa, Toshihiro; and Kaneko, Katsumi, 4,499,313, Cl. 568-897.000.
Todd, Bradley L., to Halliburton Company. Sludge lance with multiple nozzle jet head. 4,498,427, Cl. 122-379.000.
Togano, Shigeo: *See*—
Matsufuji, Yohji; Togano, Shigeo; and Ichihashi, Hiroo, 4,499,478, Cl. 346-140.00R.
Tokano, Motoharu; and Kushima, Keiichi, to Q. P. Corporation. Continuous sterilizing apparatus using hot water. 4,499,056, Cl. 422-299.000.
Tokico Ltd.: *See*—
Kiba, Hiroshi; Itoh, Yoshimasa; and Kiryu, Kiyuji, 4,498,414, Cl. 118-663.000.
Tamura, Koichi, 4,498,564, Cl. 188-73.320.
Tokuyama, Takashi: *See*—
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.
Tokyo Shibaura Denki Kabushika Kaisha: *See*—
Hashizume, Kenichi, 4,498,456, Cl. 126-425.000.
Tokyo Shibaura Denki Kabushiki: *See*—
Yokota, Tsuneshi, 4,499,571, Cl. 369-54.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hidaka, Yoshiharu, 4,499,350, Cl. 200-144.0AP.
Hosoya, Masahiro; and Ueno, Tsuyoshi, 4,498,756, Cl. 355-3.0DD.
Inoue, Tomoyasu; and Shibata, Kenji, 4,498,226, Cl. 29-576.00B.
Izume, Takatomo; and Okado, Chihiro, 4,499,363, Cl. 219-130.210.
Katsura, Masaki; Harata, Mituo; Takikawa, Osamu; and Shiratori, Masayuki, 4,499,054, Cl. 422-98.000.
Koike, Hideharu, 4,499,416, Cl. 323-303.000.
Konishi, Satoshi, 4,499,387, Cl. 307-443.000.
Maeguchi, Kenji, 4,498,224, Cl. 29-571.000.
Morinaga, Kaoru, 4,499,573, Cl. 369-270.000.
Sasaki, Minoru; and Kamiya, Toshiharu, 4,499,459, Cl. 340-752.000.
Sugaya, Toshihiro, 4,499,511, Cl. 360-78.000.
Sugimoto, Yasuhiro, 4,499,429, Cl. 330-254.000.
Watanabe, Junji, 4,498,665, Cl. 271-289.000.
Tokyo Yogyo Kabushiki Kaisha: *See*—
Yoshihara, Tetsuya, 4,498,611, Cl. 222-599.000.
Toll, Ian C., to Futaire Limited. Aircraft seating. 4,498,649, Cl. 244-118.600.
Tomar, Julius, to Home of Champions, S.A. Process for coating ball cores. 4,498,667, Cl. 273-60.00B.
Tomassi, Roberto; and Martin, Claude, to Mead Corporation, The. Article carrier. 4,498,582, Cl. 206-427.000.
Tomcufcik, Andrew S.; Meyer, Walter E.; and Eudy, Nancy H., to American Cyanamid Company. 2-(Pyridyl)imidazolyl ketones. 4,499,097, Cl. 514-341.000.
Tomita, Katsuhiko: *See*—
Miyatake, Kimio; and Tomita, Katsuhiko, 4,499,379, Cl. 250-343.000.
Tomkewitsch, Romuald V.: *See*—
Winzer, Gerhard; and Tomkewitsch, Romuald V., 4,498,731, Cl. 350-96.160.
Tomko, Bela; Marai, Geza; and Karacsonyi, Bela. Phosphorous-nitroferous solid fodder composition and process for its production. 4,499,110, Cl. 426-69.000.
Tomono, Makoto: *See*—
Haneda, Satoshi; Itaya, Masahiko; and Tomono, Makoto, 4,499,169, Cl. 430-102.000.
Tong, Hua S., to Revere Copper and Brass Incorporated. Aluminum-manganese-tin alloys with improved pitting corrosion resistance. 4,499,050, Cl. 420-528.000.
Tong, Hua S., to Revere Copper and Brass Incorporated. Pitting resistant aluminum alloys. 4,499,051, Cl. 420-540.000.
Topper, Robert J.: *See*—
Dischert, Robert A.; and Topper, Robert J., 4,499,494, Cl. 358-164.000.
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Process for preparing 3-exo-methylenecepham derivatives. 4,499,265, Cl. 544-16.000.
Torino, Arthur J., Jr.; Bouchard, George A.; and Keane, Philip A., to Raytheon Company. Method of producing velocity-aided range gates. 4,499,466, Cl. 343-7.300.
Toropov, Gennady A.; and Shamenko, Stepan P. Thread-rolling tool. 4,498,322, Cl. 72-118.000.
Torrington Company, The: *See*—
Pastor, William, 4,498,888, Cl. 464-112.000.
Toshima, Shinobu: *See*—
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,498,739, Cl. 350-357.000.
Toso Kabushiki Kaisha: *See*—
Mase, Ryoichi, 4,498,517, Cl. 160-294.000.
Toulhoat, Herve ; Plumail, Jean-Claude; Billon, Alain; and Quignard, Alain, to Institut Francais du Petrole. Hydrotreatment process for converting a heavy hydrocarbon fraction containing sulfur impurities and metal impurities to a lighter oil, in at least two steps. 4,498,972, Cl. 208-59.000.
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, to Societe Francaise des Produits pour Catalyse Pro-Catalyse. Supported catalyst of increased resistance to poisons, useful for hydrotreating metal-containing oil fractions. 4,499,203, Cl. 502-247.000.
Tovalin, Jose L. L.: *See*—
Martinez-Vera, Enrique; Guerra-Garcia, Gilberto; and Tovalin, Jose L. L., 4,498,498, Cl. 137-613.000.
Towmotor Corporation: *See*—
Johannson, Richard J., 4,498,838, Cl. 414-664.000.
Toyama Prefecture: *See*—
Tanino, Katsumi; Fujiki, Satoshi; and Okamoto, Shinzi, 4,499,010, Cl. 252-512.000.
Toyo Boseki Kabushiki Kaisha: *See*—
Saitoh, Minoru; Arimatsu, Yoshikazu; Tani, Katsuya; and Mitamura, Hideyuki, 4,499,221, Cl. 524-109.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Nomura, Kenji; Yamakage, Tetsuro; and Noro, Katsuyoshi, 4,498,571, Cl. 198-339.000.
Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikuro, 4,498,259, Cl. 51-165.710.
Toyohisa, Shirou: *See*—
Fujita, Kiyoshi; Toyohisa, Shirou; Katou, Osamu; and Ishimaru, Kenji, 4,498,988, Cl. 210-397.000.
Toyokoki Co., Ltd.: *See*—
Nagakura, Seiju, 4,498,328, Cl. 72-482.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Kashiwagi, Hiroo, 4,498,243, Cl. 33-203.120.
Nakamura, Norihiko; and Baika, Toyokazu, 4,498,431, Cl. 123-90.150.
Sato, Kunihiko, 4,498,438, Cl. 123-418.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Katagiri, Masayoshi; and Kondo, Toshio, 4,498,559, Cl. 188-1.110.
Toyotomi Kogyo Co., Ltd.: *See*—
Nakamura, Kazuharu; and Nakanishi, Yutaka, 4,498,862, Cl. 431-88.000.
TP Laboratories, Inc.: *See*—
Kesling, Peter C., 4,498,867, Cl. 433-16.000.
Trahan, Wilson J. Wireline catcher. 4,498,563, Cl. 188-65.100.
Trane Company, The: *See*—
Fiegen, Donald S.; and Ware, Chester D., 4,498,220, Cl. 29-157.30C.
Traunecker, Werner; Frolke, Wilhelm; Kreuzer, Heinrich; and Kollmer, Hans P., to Boehringer Ingelheim KG. Lipolytic composition and method of treating obesity. 4,499,106, Cl. 514-603.000.
Traut, Martin: *See*—
Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, 4,499,087, Cl. 514-211.000.
Trautman, Robert D., to Boeing Company, The. Retractable vertical restraint mechanism for an aircraft cargo system. 4,498,823, Cl. 410-84.000.
Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, to BASF Aktiengesellschaft. 7-Phenyl-7-phenoxymethyl-hexahydro-1,4-oxazepines and their use. 4,499,087, Cl. 514-211.000.
Trenwyth Industris, Inc.: *See*—
Kingston, Alan C., 4,499,142, Cl. 428-331.000.
Treuner, Uwe D.: *See*—
Breuer, Hermann; Denzel, Theodor; and Treuner, Uwe D., 4,499,016, Cl. 260-239.00A.
Trimble, Donald E.: *See*—
Thomson, David W.; and Trimble, Donald E., 4,499,435, Cl. 331-44.000.
Trimmer, Robert W.: *See*—
Skjold, A. Christopher; Stover, Lonnie R.; and Trimmer, Robert W., 4,499,185, Cl. 435-19.000.

Tripp, Jeff; Allen, John; and Murphy, F. Merrick. Apparatus for providing extended versatility in a keyboard-controlled musical instrument in pitch variation, tone alteration characteristics and the like. 4,498,365, Cl. 84-1.240.

TRW Inc.: *See—*
Stokes, Robert B.; Yen, Kuo-Hsiung; Lau, Kei-Fung; Kagiwada, Reynold S.; and Delaney, Michael J., 4,499,393, Cl. 310-313.00A.
Wesson, Laurence N., 4,498,348, Cl. 73-862.050.

Tsao, Kuey Y.: *See—*
McGovern, William E.; and Tsao, Kuey Y., 4,498,767, Cl. 356-121.000.

Tsay, Yuh-Geng: *See—*
Calenoff, Emanuel; Jones, Ruth M.; Tsay, Yuh-Geng; and Beigler, Myron A., 4,499,065, Cl. 424-9.000.

Tsubata, Noritaka, to Yoshida Kogyo K. K. Apparatus for manufacturing a woven slide fastener stringer. 4,498,502, Cl. 139-35.000.

Tsubouchi, Kuniyoshi, to Hitachi, Ltd. Cooling device of steam turbine. 4,498,301, Cl. 60-657.000.

Tsuchikura, Akira: *See—*
Ogawa, Masaki; Hirata, Yasushi; and Tsuchikura, Akira, 4,499,228, Cl. 524-413.000.

Tsuchiya, Toshiharu; and Iwata, Mamoru, to Shinryo Seikan Kabushiki Kaisha. Detection of improper coating of sealing composition on can end disks. 4,498,415, Cl. 118-712.000.

Tsujimoto, Yoshinobu: *See—*
Tanaka, Tsutomu; Tsujimoto, Yoshinobu; Serizawa, Hiroyuki; and Hattori, Katsuji, 4,498,730, Cl. 350-96.160.

Tsukada, Katsushige: *See—*
Ishimaru, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, 4,499,163, Cl. 430-5.000.

Tsurukawa, Ikuya: *See—*
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, 4,498,754, Cl. 354-479.000.

Tubular Specialties Mfg., Inc.: *See—*
Cooper, Leo, 4,498,654, Cl. 248-251.000.

Tuchman, Samuel: *See—*
Perlov, Gena; and Tuchman, Samuel, 4,498,850, Cl. 417-322.000.

Tucker, Alfred D., to RIS Irrigation Systems Pty Ltd. Butterfly sprinkler. 4,498,628, Cl. 239-381.000.

Turner, George F. A. M., to Ciba-Geigy A.G. Fixed focus enlarger. 4,498,763, Cl. 355-55.000.

Turner, Robert C.; Stone, Anthony B.; and Holman, Rury R. Dose metering plunger devices for use with syringes. 4,498,904, Cl. 604-211.000.

Turpin, Robert, Sr.; and Spector, George. Driver alert. 4,499,456, Cl. 340-576.000.

Tyree, Lewis, Jr. Refrigerated transport. 4,498,306, Cl. 62-119.000.

U.S.D. Corp.: *See—*
Kranz, Max L.; and Gadberry Donald L., 4,498,471, Cl. 128-204.260.

Ubakata, Tadayoshi: *See—*
Sakano, Riichi; and Ubakata, Tadayoshi, 4,498,311, Cl. 62-227.000.

Ube Industries Ltd.: *See—*
Nakamura, Yukio; and Tanaka, Tsuneo, 4,499,136, Cl. 428-206.000.

Ueda, Katsuroh, to Matsushita Electric Industrial Co., Ltd. Cooking appliance. 4,498,453, Cl. 126-21.00A.

Uehara, Makoto, to Nippon Kogaku K.K. Illumination optical arrangement. 4,498,742, Cl. 350-523.000.

Uehara, Makoto; and Anzai, Satoru, to Nippon Kogaku K.K. Projection type exposure apparatus. 4,498,762, Cl. 355-55.000.

Uemura, Fumiko: *See—*
Onura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, 4,499,251, Cl. 526-278.000.

Uemura, Takeshi: *See—*
Onda, Kenichi; Abe, Kojin; Yabuno, Kohei; and Uemura, Takeshi, 4,499,530, Cl. 363-17.000.

Ueno, Tsuyoshi: *See—*
Hosoya, Masahiro; and Ueno, Tsuyoshi, 4,498,756, Cl. 355-3.0DD.

Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, to A/S Alfred Benzon. Bacteria carrying plasmid having temperature dependent plasmid copy number. 4,499,189, Cl. 435-253.000.

Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Recording and/or reproducing apparatus. 4,499,513, Cl. 360-96.300.

Umezaki, Hiroshi: *See—*
Kadokura, Hidekimi; and Umezaki, Hiroshi, 4,498,931, Cl. 106-307.000.

Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 3-O-Demethyl derivatives of the istamycin B series of compounds. 4,499,083, Cl. 514-36.000.

Ungar, Israel S.: *See—*
O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., 4,499,137, Cl. 428-211.000.

Union Carbide Canada Limited: *See—*
Brema, Robert J.; Adamson, Gerald J.; Poissant, Philip L.; and Cleminson, John H., 4,498,660, Cl. 256-19.000.

Union Carbide Corporation: *See—*
Forte, Paulino, 4,498,980, Cl. 208-321.000.
Fuderer, Andrija, 4,499,208, Cl. 502-415.000.
Garska, Daniel C.; and Lok, Brent M., 4,499,315, Cl. 585-415.000.
Garska, Daniel C.; and Tellis, Cyril B., 4,499,316, Cl. 585-415.000.
Kaiser, Steven W., 4,499,327, Cl. 585-640.000.
Kirkpatrick, Robert D.; and Weiler, David W., 4,499,035, Cl. 261-114.0JP.
Koerwer, John F., 4,498,920, Cl. 71-66.000.
Maresca, Louis M., 4,499,257, Cl. 528-173.000.
Senuma, Akitaka; and Aizawa, Takao, 4,499,210, Cl. 521-91.000.

Union Oil Company of California: *See—*
Pye, David S.; Ash, Donald L.; and Rardin, Robert W., 4,498,543, Cl. 166-376.000.
Watkins, David R.; and Kalfayan, Leonard J., 4,498,538, Cl. 166-295.000.

Union Special G.m.b.H.: *See—*
Von Hagen, Wolf R., 4,498,406, Cl. 112-256.000.

Unisearch Limited: *See—*
Minh, Thi H.; Cole, Edward R.; and Crank, George, 4,499,115, Cl. 426-546.000.

U.S. Industrial Products Co.: *See—*
Hosoya, Toshiro, 4,498,330, Cl. 73-23.000.

United States of America
Air Force: *See—*
Kahan, Alfred, 4,499,395, Cl. 310-361.000.
Marvel, Carl S.; and Lin, See, 4,499,258, Cl. 528-173.000.
Merritt, Francis L.; and Ducati, Adriano C., 4,499,334, Cl. 174-111.000.
Montana, Donald M.; and Herd, Randy S., 4,499,468, Cl. 343-15.000.
Smith, Paul R.; and Froes, Francis H., 4,499,156, Cl. 428-614.000.
Army: *See—*
Gutierrez, William A.; and Wilson, Herbert L., 4,498,225, Cl. 29-572.000.
Holl, Herbert B., 4,498,768, Cl. 356-141.000.
Rittenbach, Otto, 4,499,467, Cl. 343-9.00R.
Energy: *See—*
Christiansen, David W., 4,498,834, Cl. 414-291.000.
Materna, Peter A., 4,499,443, Cl. 335-216.000.
McAllister, John E., Jr., 4,499,034, Cl. 261-109.000.
Spicer, Leonard D.; Bennett, Dennis W.; and Davis, Jon F., 4,499,190, Cl. 436-122.000.
Interior: *See—*
Oden, Laurance L.; and Dunning, John S., 4,498,928, Cl. 75-124.000.
National Aeronautics and Space Administration: *See—*
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,499,260, Cl. 528-229.000.
Parthasarathy, Shakkottai P., 4,498,333, Cl. 73-40.50A.
Rand, James L., 4,498,231, Cl. 29-610.0SG.
Rowlette, John J., 4,499,424, Cl. 324-427.000.
Stacey, Joseph M., 4,499,470, Cl. 343-352.000.
Navy: *See—*
Abbott, Frank R., 4,499,566, Cl. 367-165.000.
Bloomer, James W., II; and Nunn, Robert H., 4,498,329, Cl. 73-9.000.
Chamberland, Roger R.; and Stanland, Andrew J., 4,498,491, Cl. 137-72.000.
Doane, William J., 4,498,368, Cl. 89-1.817.
Greene, Richard F., 4,499,481, Cl. 357-22.000.
Howarth, Robert F., 4,499,584, Cl. 375-58.000.
Simms, Charles C., 4,498,233, Cl. 29-747.000.
Sitzmann, Michael E.; and Gilligan, William H., 4,499,309, Cl. 568-590.000.

U.S. Philips Corporation: *See—*
Boonstra, Alexander H.; Mutsaers, Cornelis A. H. A.; and van der Kruijs, Franciscus N. G. R., 4,499,011, Cl. 252-518.000.
Braat, Josephus J. M., 4,499,574, Cl. 369-275.000.
Brettschneider, Horst; and Hartl, Walter, 4,499,592, Cl. 378-121.000.
Demmer, Walter; Gutsmann, Rolf D.; and Lenth, Jurgen, 4,499,427, Cl. 329-107.000.
Dijkstra, Kees; and Garenfeld, Andreas J., 4,498,296, Cl. 60-521.000.
Garskamp, Arnoldus, 4,499,605, Cl. 455-210.000.
Kowalski, Gunter, 4,499,540, Cl. 364-414.000.
Schouhamer Immink, Kornelis A.; and Aarts, Ronaldus M., 4,499,570, Cl. 369-48.000.
Steinmetz, Anthony; Arnold, Jacobus J.; Verweg, Fransiscus G. C.; and Groeneboer, Hendrik, 4,498,727, Cl. 339-278.00C.
Stover, Johannes H.; and Van Leeuwen, Johannes A., 4,498,884, Cl. 445-45.000.
van der Heijden, Antonius W. F., 4,499,402, Cl. 313-414.000.
Vollenbroek, Franciscus A.; and Spiertz, Elisabeth J., 4,499,177, Cl. 430-311.000.

U.S. Properties Inc.: *See—*
Steudle, Ernst W., 4,498,641, Cl. 242-106.000.

United States Steel Corporation: *See—*
Korpela, Thomas; and Subrick, Joseph, 4,498,816, Cl. 405-259.000.

United Steel Products Company: *See—*
Sielaff, Ulrich, 4,498,800, Cl. 403-172.000.

United Technologies Corporation: *See—*
Fisher, James E., 4,498,790, Cl. 384-428.000.
Grudkowski, Thomas W., 4,499,440, Cl. 333-151.000.
Guertin, Joseph J.; and Provencal, Earl J., 4,498,617, Cl. 228-119.000.
Holiday, Paul R., deceased; Holiday, Suzanne N., executrix; and Kear, Bernard H., 4,499,155, Cl. 428-586.000.

Universal Filters, Inc.: *See—*
Rosaen, Lars O., 4,498,497, Cl. 137-599.100.

Universite Paris X - Paris: *See—*
Herve, Philippe, 4,498,765, Cl. 356-43.000.

University of Illinois, Board of Trustees: *See—*
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., 4,499,186, Cl. 435-23.000.

University of Manchester Institute of Science and Technology, The: *See—*
Atkinson, Bernard; Black, Geoffrey M.; Pinches, Anthony; and Lewis, Paul J. S., 4,498,985, Cl. 210-151.000.
University of Nottingham: *See—*
Wright, Arthur; and Christopoulos, Christos, 4,499,417, Cl. 324-52.000.
Unterleitner, Fred C., to Becton, Dickinson and Company. Light beam focal spot elongation in flow cytometry devices. 4,498,766, Cl. 356-73.000.
UOP Inc.: *See—*
Frame, Robert R., 4,498,977, Cl. 208-207.000.
Frame, Robert R., 4,498,978, Cl. 208-207.000.
Leyerle, Richard W., 4,499,201, Cl. 502-180.000.
Malloy, Thomas P.; and Engel, Dusan J., 4,499,300, Cl. 562-495.000.
Oroskar, Anil R., 4,498,991, Cl. 210-659.000.
Sikonia, John G.; and Bennett, Richard W., 4,498,973, Cl. 208-63.000.
Upjohn Company, The: *See—*
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,499,293, Cl. 549-465.000.
USM Corporation: *See—*
Shields, Thomas A., 4,499,353, Cl. 206-470.000.
Utsumi, Masahiro: *See—*
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.
Vacuum Furnace System Corporation: *See—*
Gibb, Thomson B., 4,499,369, Cl. 219-552.000.
Valentine, Robert H., to Hercules Incorporated. Low density, polybutadiene based, wet filament winding resin. 4,499,240, Cl. 525-193.000.
Valeo: *See—*
Jacquet, Maurice, 4,498,528, Cl. 165-42.000.
Renaud, Pierre, 4,498,565, Cl. 192-98.000.
Renaud, Pierre, 4,498,566, Cl. 192-98.000.
Vallee, Robert G., to George P. Johnson Co. Display turntable. 4,498,398, Cl. 104-44.000.
Valone, Frederick W.; and Rutledge, Joseph. Corrosion inhibitors. 4,499,006, Cl. 252-392.000.
Vancil, Paul W.: *See—*
Marouf, Mohamed A.; and Vancil, Paul W., 4,499,578, Cl. 370-62.000.
van der Heijden, Antonius W. F., to U.S. Philips Corporation. Color display tube. 4,499,402, Cl. 313-414.000.
van der Kruijs, Franciscus N. G. R.: *See—*
Boonstra, Alexander H.; Mutsaers, Cornelis A. H. A.; and van der Kruijs, Franciscus N. G. R., 4,499,011, Cl. 252-518.000.
Vanderspurt, Thomas H.; Richard, Michael A.; and Montagna, Angelo A., to Exxon Research & Engineering Co. Leached catalyst for ammonia synthesis. 4,499,204, Cl. 502-301.000.
Van Dijk, Alfonsius A. J., to Johannes Menschner Maschinenfabrik GMBH & Co. KG. Seam-detecting device for interconnected sections of sheet material. 4,498,240, Cl. 33-147.00L.
van Dijk, Petrus R. M., to AMP Incorporated. Electrical connector for an electronic package. 4,498,721, Cl. 339-75.0MP.
Van Leeuwen, Johannes A.: *See—*
Stover, Johannes H.; and Van Leeuwen, Johannes A., 4,498,884, Cl. 445-45.000.
Vanlerberghe, Guy: *See—*
Sebag, Henri; and Vanlerberghe, Guy, 4,499,070, Cl. 424-70.000.
Van Noten, Lodewijk: *See—*
Moisson, Marc; Van Noten, Lodewijk; Overbergh, Noel; Franckx, Joris; and Buekers, Valere, 4,498,938, Cl. 156-49.000.
van Rijswijk, Jacob, to Jacotra A. G. Fluid containing string with opening to pass fluid from core. 4,499,144, Cl. 428-376.000.
Varco International, Inc.: *See—*
Zimmermann, Abraham, 4,498,698, Cl. 294-82.00R.
Varga, Imre: *See—*
Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.
Varian Associates, Inc.: *See—*
Hertel, Richard J., 4,498,833, Cl. 414-217.000.
Varma, Ravi K., to E. R. Squibb & Sons, Inc. 17β(Substituted thio)-16-ketoandrostene-17α.-carboxylic acid derivatives. 4,499,021, Cl. 260-397.100.
Vater, George R.; and Melles, Harold W., to International Harvester Company. Motor vehicle transmission. 4,498,356, Cl. 74-745.000.
Vaughn, James N., to Caslin, Richard L. Transparent perspective tracing board. 4,498,238, Cl. 33-1.00K.
VEB Kombinat Textima: *See—*
Schadlich, Gotthard, 4,498,254, Cl. 38-14.000.
Veenhof, Willem D. Scraping devices for conveyor belt and pulley drum. 4,498,577, Cl. 198-499.000.
Verdier, Jean-Michel: *See—*
Grosbois, Jean; Jacubert, Serge; and Verdier, Jean-Michel, 4,499,063, Cl. 423-347.000.
Ver Planck, H. T.: *See—*
Botterman, D. L.; Wolff, N. A.; and Ver Planck, H. T., 4,498,420, Cl. 119-15.000.
Verweg, Fransiscus G. C.: *See—*
Steinmetz, Anthony; Arnold, Jacobus J.; Verweg, Fransiscus G. C.; and Groeneboer, Hendrik, 4,498,727, Cl. 339-278.00C.
Verwer, Andreas N. J.; and Evers, Johannes T. M., to DSM Resins B.V. Polyester in-mould coating powder. 4,499,235, Cl. 525-38.000.
Vestergaard, Alex D., to Ingeniorfirmaet Lytzen KS. Shaft seal. 4,498,678, Cl. 277-3.000.
Vickers, Incorporated: *See—*
Breeden, Robert H.; and Taylor, Henry D., 4,498,370, Cl. 91-171.000.
Vickers PLC of Vickers House: *See—*
Brake, Arthur L., 4,498,814, Cl. 405-224.000.
Victor Company of Japan, Ltd.: *See—*
Shimada, Kengo; Chiba, Yutaka; and Sanuki, Toshio, 4,498,363, Cl. 84-1.010.
Sugiyama, Hiroyuki; Abe, Ryozo; and Yoshihara, Kenji, 4,499,505, Cl. 358-342.000.
Takahashi, Nobuaki; and Shibamoto, Takeshi, 4,499,506, Cl. 358-343.000.
Umeda, Hiroyuki, 4,499,513, Cl. 360-96.300.
Yamada, Yasuhiro; and Mori, Takaro, 4,499,507, Cl. 360-26.000.
Vierling, Karl-Heinz: *See—*
Karning, Heinrich; Prein, Franz; and Vierling, Karl-Heinz, 4,499,582, Cl. 372-93.000.
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Peltonen, Eero; Somerikko, Aarni; and Viitanen, Timo, 4,498,338, Cl. 73-432.00R.
Vincent, Kent D., to Hewlett-Packard Company. Infrared source element. 4,499,382, Cl. 250-493.100.
Vinson, Heinz: *See—*
Stoesser, Klaus; and Vinson, Heinz, 4,499,462, Cl. 340-825.310.
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Goodale, Robert H.; and DuJack, James M., 4,499,148, Cl. 428-447.000.
Vitale, Carmela. Package saver. 4,498,586, Cl. 206-525.000.
Vogt, Robert L., to General Electric Company. Fuel injection staged sectoral combustor for burning low-BTU fuel gas. 4,498,288, Cl. 60-39.060.
Vojacek, Herbert: *See—*
Hentschel, Karl-Heinz; Dhein, Rolf; Winter, Hans; and Vojacek, Herbert, 4,499,000, Cl. 252-73.000.
Volkmann, Robert A.: *See—*
Pirie, Donald K.; Volkmann, Robert A.; and Kleinman, Edward F., 4,499,017, Cl. 260-245.20R.
Vollenbroek, Franciscus A.; and Spiertz, Elisabeth J., to U.S. Philips Corporation. Method of manufacturing a semiconductor device. 4,499,177, Cl. 430-311.000.
Volvo Penta AB: *See—*
Pichl, Heinz, 4,498,874, Cl. 440-83.000.
von Bieren, Karlheinz, to Rockwell International Corporation. Pencil beam interferometer. 4,498,773, Cl. 356-360.000.
von Bonin, Wulf; Mummenhoff, Peter; Beck, Ulrich; and Baumgen, Heinz, to Bayer Aktiengesellschaft. Sizes. 4,499,153, Cl. 428-479.600.
Von Hagen, Wolf R., to Union Special G.m.b.H. Sewing machine lubrication system. 4,498,406, Cl. 112-256.000.
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Vorhauer, Hans, to Maschinenfabrik Alfred Schmermund GmbH & Co. Device for supplying and for bringing together a web of packaging material and a tear strip web. 4,498,274, Cl. 53-412.000.
Vornfett, Karl-Ulrich: *See—*
Steinke, Hermann O.; Steinke, Roland; and Vornfett, Karl-Ulrich, 4,498,362, Cl. 83-304.000.
Vorwerk, Frederick E.; and Mundloch, James D., to ACF Industries, Incorporated. Hopper slope sheet support and connecting means. 4,498,400, Cl. 105-248.000.
Vosacek, Robert H., to International Business Machines Corporation. Method and apparatus for limiting allocated data-storage space in a data-storage unit. 4,499,539, Cl. 364-200.000.
Vrolyk, John J., to Rockwell International Corporation. Emission controller for indirect fired downhole steam generators. 4,498,531, Cl. 166-59.000.
Vyzkumny ustav zuslechtovaci: *See—*
Dvorsky, Drahomir; and Cerovsky, Karel, 4,499,282, Cl. 548-336.000.
W. F. Altenpohl, Inc.: *See—*
Altenpohl, Paul J., 4,498,578, Cl. 198-680.000.
W. R. Grace & Co.: *See—*
Hawkes, J. Barry, Jr., 4,499,036, Cl. 264-26.000.
Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,499,206, Cl. 502-304.000.
Seese, Mark A.; and Chiang, Robert L., 4,499,197, Cl. 502-65.000.
W. Schlafhorst & Co.: *See—*
Kupper, Wilhelm; and Koslowski, Gerhard, 4,498,644, Cl. 242-131.100.
Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, to Fuji Photo Film Co., Ltd. Optical information recording material. 4,499,178, Cl. 430-495.000.
Wagner, Kuno: *See—*
Kerimis, Dimitrios; Muller, Hanns P.; and Wagner, Kuno, 4,499,253, Cl. 528-45.000.
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.
Wagner, Theresia K. Sunscreen cover apparatus for an evaporative cooler. 4,498,912, Cl. 55-233.000.
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Waibel, Helmut K., to Durango Systems, Inc. Printer feeder. 4,498,794, Cl. 400-629.000.

Wakabayashi, Takao, to Nakanishi Metal Works Co., Ltd. Free line switch arrangement for power-and-free trolley conveyor. 4,498,399, Cl. 104-96.000.

Wakamatsu, Kazutoshi: *See*—
Kamo, Yuichi; Mikami, Nobuo; Wakamatsu, Kazutoshi; and Naito, Kunio, 4,499,442, Cl. 335-79.000.

Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Jurgen, to Hoechst Aktiengesellschaft. Open-cell/microporous molded article. 4,499,211, Cl. 521-145.000.

Walker, Charles F.: *See*—
Leveille, Michael A.; and Walker, Charles F., 4,499,455, Cl. 340-531.000.

Walker, Michael L., to Halliburton Company. Method and composition for acidizing subterranean formations. 4,498,997, Cl. 252-8.55C.

Walker, Wellington J.; and Whitehouse, George M., deceased (by Whitehouse, Barbara J., executor), to LFE Corporation. Automatic lock for two mode piston pump. 4,498,354, Cl. 74-625.000.

Wall, Helmut: *See*—
Schmidhuber, Karl; Wall, Helmut; and Demovic, Vojtech, 4,498,703, Cl. 297-328.000.

Wallach, Steven J.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.

Wallach, Walter A., Jr.: *See*—
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.

Walsh, LaVerne E., to General Electric Company. Incandescent lamp with ceramic base. 4,499,404, Cl. 313-579.000.

Waltasti, Stephen A.: *See*—
Moody, Roy A.; Bulanda, John J.; Levin, Robert F.; Timian, Steven S.; and Waltasti, Stephen A., 4,498,506, Cl. 140-93.200.

Walter Eckold GmbH & Co. KG: *See*—
Reccius, Helmut; and Ponitzsch, Werner, 4,498,325, Cl. 72-302.000.

Walter, Henry J., to Clairol Incorporated. Heated personal care appliances. 4,499,355, Cl. 219-10.49R.

Walters, Donald N.; and Link, Theodore P. Shopping cart incorporating removable skid, runner or ski attachment. 4,498,688, Cl. 280-7.120.

Wamsley, Richard D.; and Polman, David J., to Harris Graphics Corporation. Signature handling apparatus for detection of short signature groups. 4,498,663, Cl. 270-54.000.

Wang, Chun S.; Pham, Ha Q.; and Bertram, James L., to Dow Chemical Company, The. Preparation of epoxy resins. 4,499,255, Cl. 528-95.000.

Warabi, Junichi: *See*—
Sakuma, Shinzo; Warabi, Junichi; Kano, Masayuki; and Kashimoto, Yutaka, 4,499,349, Cl. 200-144.00B.

Ward, Irl E.; and Papoojian, Philip M., to J. T. Baker Chemical Company. Pellicle compositions and pellicles thereof for projection printing. 4,499,231, Cl. 524-506.000.

Ward, Marvin W. Data monitoring connector for testing transmission links. 4,498,716, Cl. 339-17.00R.

Wardlow, William C.: *See*—
Leflar, James A.; and Wardlow, William C., 4,498,265, Cl. 52-403.000.

Ware, Chester D.: *See*—
Fiegen, Donald S.; and Ware, Chester D., 4,498,220, Cl. 29-157.30C.

Warncke, Ernst, to Dragerwerk AG. Respirator having circulating breathing gas. 4,498,470, Cl. 128-202.260.

Warner-Lambert Company: *See*—
Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.
Cheng, Chia C.; and Zee-Cheng, Robert K., 4,499,266, Cl. 544-126.000.
Eoga, Anthony B. J., 4,499,001, Cl. 252-99.000.
Richter, Arno, 4,498,417, Cl. 119-5.000.

Warner, Stanley H. Adjustable position physical support system. 4,498,204, Cl. 4-559.000.

Wartelle, Claude; and Favey, Charles, to Centre Technique Des Industries Mecaniques. Ball and socket joint and method of forming it. 4,498,799, Cl. 403-140.000.

Warwick, David R. Door repair system. 4,498,694, Cl. 292-337.000.

Washbourn, Jack: *See*—
Langley, Keith W.; and Washbourn, Jack, 4,498,711, Cl. 303-13.000.

Watanabe, Eifu, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Outboard motor. 4,498,875, Cl. 440-88.000.

Watanabe, Junji, to Tokyo Shibaura Denki Kabushiki Kaisha. Paper sorting/storing apparatus. 4,498,665, Cl. 271-289.000.

Watanabe, Kazumasa; Deguchi, Hidetaka; and Suginaka, Shunji, to Konishiroku Photo Ind., Co., Ltd. Photographic recording material with indole redox releaser. 4,499,181, Cl. 430-558.000.

Watanabe, Tatsuya: *See*—
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,499,340, Cl. 179-115.5DV.

Watanabe, Yasushi; Suzuki, Yuichi; Nagata, Yukihiro; and Hoshino, Kiyotaka, to Furukawa Electric Co., Ltd., The; and Furukawa Battery Co., Ltd., The. Apparatus for continuous manufacturing lead or lead alloy strip. 4,498,519, Cl. 164-417.000.

Watkins, David R.; and Kalfayan, Leonard J., to Union Oil Company of California. Method for maintaining the permeability of fines-containing formations. 4,498,538, Cl. 166-295.000.

Watson, Charles K.: *See*—
Muhs, Harvey P., Jr.; and Watson, Charles K., 4,499,474, Cl. 343-771.000.

Watts, Eric A., to Beecham Group p.l.c. Nortropane and granatane type compounds useful in treating psychosis. 4,499,099, Cl. 514-299.000.

Webb, Paul P.: *See*—
Yamazaki, Tsuneo; Faltas, Mervat; and Webb, Paul P., 4,499,483, Cl. 357-30.000.

Weber, Georg: *See*—
Haas, Gunther; and Weber, Georg, 4,499,004, Cl. 252-299.100.

Weber, J. William: *See*—
Schneider, Philip H.; Weber, J. William; and Massaro, Thomas A., 4,498,843, Cl. 417-22.000.

Weber S.P.A.: *See*—
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Weber-Stephen Products Co.: *See*—
Schlosser, Erich J.; and Stephen, George, Jr., 4,498,452, Cl. 126-9.00R.

Wei, Victor K.: *See*—
DiNicolantonio, Arthur R.; and Wei, Victor K., 4,499,055, Cl. 422-197.000.

Weikert, Norbert B.: *See*—
Best, Gerd; and Weikert, Norbert B., 4,498,707, Cl. 299-81.000.

Weiler, David W.: *See*—
Kirkpatrick, Robert D.; and Weiler, David W., 4,499,035, Cl. 261-114.0JP.

Weinstein, Paul; and Kelmachter, Barry L., to Olin Corporation. Method and apparatus for laser sizing of optical fibers. 4,498,917, Cl. 65-2.000.

Weir, Frederick E. Breakwater module and means for protecting a shoreline therewith. 4,498,805, Cl. 405-31.000.

Weiss, Leslie. Twin dental brush. 4,498,209, Cl. 15-167.00A.

Wellendorf, Klaus: *See*—
Gall, Winrich; and Wellendorf, Klaus, 4,499,489, Cl. 358-75.000.

Weller, Harold N., III: *See*—
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Wellinghoff, Stephen T.; Jenekhe, Samson A.; and Kedrowski, Thomas J., to Honeywell Inc. Method of making stable electrically conducting polymers. 4,499,008, Cl. 252-500.000.

Wells, Calvin G.; and Szabo, Steve B., to Rockwell International Corporation. Axle for use with a tire inflation system. 4,498,709, Cl. 301-5.0VH.

Welte, Dieter: *See*—
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Weltec Digital, Inc.: *See*—
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Wentland, Mark P.; and Bailey, Denis M., to Sterling Drug Inc. 1-Amino (or substituted amino)-1,4-dihydro-4-oxo-6-fluoro-7-heteryl-quinoline-3-carboxylic acids and their use as antibacterial agents. 4,499,091, Cl. 514-254.000.

Wenzel, Reinhard: *See*—
Pav, Josef; Schmitz, Wimmar; and Wenzel, Reinhard, 4,498,383, Cl. 100-162.00B.

Werner & Pfleiderer: *See*—
Rudolph, Joachim, 4,498,783, Cl. 366-132.000.

Werner, William A., to Werner, William A. Sign standard for supporting and displaying a sign. 4,498,657, Cl. 248-623.000.

Wesson, Laurence N., to TRW Inc. Photoelastic sensing device. 4,498,348, Cl. 73-862.050.

Westfalia Separator AG: *See*—
Gunnewig, Hubert, 4,498,897, Cl. 494-27.000.

Westinghouse Brake and Signal: *See*—
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Westinghouse Electric Corp.: *See*—
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Wetzel, David L., to Northern Telecom, Ltd. Key telephone system signalling and control arrangement. 4,499,338, Cl. 179-99.00E.

Wheelock, Kenneth S., to Exxon Research & Engineering Co. Thermally stable mixed oxide gels. 4,499,195, Cl. 502-63.000.

Whirlpool Corporation: *See*—
Fellwock, Louis W.; Hortin, Kenneth L.; and Fellwock, Charles G., 4,498,713, Cl. 312-214.000.

White, C. Max, to Thiokol Corporation. Igniter for rocket motors. 4,498,292, Cl. 60-256.000.

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White Consolidated Industries, Inc.: *See*—
Zalewski, Gerald F., 4,498,213, Cl. 15-316.00R.

White, Cyril J.; and Joyce, Christopher, to Bicc Public Limited Company. Circuit board composite connector. 4,498,724, Cl. 339-97.00R.
White, Herbert V., to J. M. Huber Corporation. Folding pallet jig. 4,498,895, Cl. 493-476.000.
White, Lawrence K., to RCA Corporation. Method for detecting distance deviations to a photoresist surface in an optical printer. 4,498,775, Cl. 356-375.000.
White, Steven J., to Technical Arts Corporation. High speed scanning method and apparatus. 4,498,778, Cl. 356-376.000.
Whitehouse, Barbara J., executor: *See—*
Walker, Wellington J.; and Whitehouse, George M., deceased, 4,498,354, Cl. 74-625.000.
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Whitely, Elliot F.; Devoe, Richard A.; and Gadbois, Gerald W., to Lydall, Inc. Abrasion and high temperature resistant composite and method of making the same. 4,499,134, Cl. 428-102.000.
Whiteside, Judy A.: *See—*
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Whitman Medical Corporation: *See—*
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Wickstrom, Claes G., to Riensch & Held (GmbH & Co.). Turnover device. 4,498,841, Cl. 414-778.000.
Wico Corporation: *See—*
Peters, Albin, 4,498,670, Cl. 273-129.00V.
Wiese, Lee, to Philip Morris Incorporated. Overhead retail merchandising unit for cigarettes. 4,498,714, Cl. 312-312.000.
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Willard, Alvin K.: *See—*
Bernstein, Peter R.; and Willard, Alvin K., 4,499,299, Cl. 514-570.000.
Willett, Richard L. Sequentially steered receiver with timed recycle calibration. 4,499,472, Cl. 343-374.000.
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Williams Patent Crusher and Pulverizer Company: *See—*
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Williams, Robert M., to Williams Patent Crusher and Pulverizer Company. Apparatus for processing coal. 4,498,633, Cl. 241-48.000.
Williams, Terrell M., to Medtronic, Inc. Transvenous pacing lead having improved stylet. 4,498,482, Cl. 128-786.000.
Williams, Thomas M.: *See—*
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Wills, Frank E.: *See—*
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Wilner, Leslie B., to Becton, Dickinson and Company. Piezoresistive transducer. 4,498,229, Cl. 29-580.000.
Wilson, Bryce H.; and Hansen, Franklin A., to Continental Disc Corporation. Low pressure venting panel. 4,498,261, Cl. 52-1.000.
Wilson, Herbert L.: *See—*
Gutierrez, William A.; and Wilson, Herbert L., 4,498,225, Cl. 29-572.000.
Wilson, Richard A.: *See—*
Luccarelli, Domenick, Jr.; Mookherjee, Braja D.; Wilson, Richard A.; Zampino, Michael J.; and Bowen, David R., 4,499,114, Cl. 426-534.000.
Wilson, Roland B. Ice block making and storage system. 4,498,595, Cl. 211-194.000.
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Winzer, Gerhard; and Tomkewitsch, Romuald V., to Siemens Aktiengesellschaft. Optical waveguide branch coupler and method of manufacturing. 4,498,731, Cl. 350-96.160.
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Witchell, Stanley P. Air filters. 4,498,915, Cl. 55-498.000.
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Wittenborg, Poul E., to Wittenborgs Automatfabriker A/S. Vending machine comprising at least one drum. 4,498,603, Cl. 221-76.000.
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Wohlgemuth, Werner, to Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft. Latch needle for machines for producing knitted goods. 4,498,315, Cl. 66-121.000.
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Wolf, David: *See—*
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Wolf, Gordon C.: *See—*
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Wooding, Patrick J., to Wooding. Ultrahigh velocity water-cooled copper taphole. 4,498,610, Cl. 222-592.000.
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Worwood, Bryan H.; and Stallard, Paul, to Pall Corporation. Magnetic differential pressure valve with an indicator showing when valve has opened or closed. 4,498,495, Cl. 137-557.000.
Wraight, Frederick G., to Goodyear Tire & Rubber Company, The. Apparatus and method of making metallic cord. 4,498,281, Cl. 57-58.340.
Wridt, Alfred A.: *See—*
Bendickson, Roy B.; and Wridt, Alfred A., 4,498,244, Cl. 33-203.150.
Wright, Arthur; and Christopoulos, Christos, to University of Nottingham. Determining location of faults in power transmission lines. 4,499,417, Cl. 324-52.000.
Wright, John S. Extension platform to support transparencies for an overhead projector. 4,498,746, Cl. 353-120.000.
Wright, Peter V.: *See—*
Lynch, John T.; Anderson, Alfredo C.; Withers, Richard S.; and Wright, Peter V., 4,499,441, Cl. 333-161.000.
Wuerzer, Bruno: *See—*
Eicken, Karl; Rohr, Wolfgang; and Wuerzer, Bruno, 4,498,922, Cl. 71-111.000.
Wyrick, Steven D.; Hall, Iris H.; and Dubey, Agnes, to Research Corporation. Antihyperlipidemic N-benzoylsulfamates, N-benzylsulfamates and benzylsulfonamides. 4,499,303, Cl. 514-605.000.
Wysocki, Lawrence S.: *See—*
Dickert, James C.; Roccaforte, Harry I.; and Wysocki, Lawrence S., 4,498,620, Cl. 229-52.00A.
Xerox Corporation: *See—*
Miazga, Dennis E.; Nguyen, Tuan A.; and Dugan, Michael T., 4,499,581, Cl. 371-20.000.
Yabe, Masao; Naruo, Kyoichi; and Ono, Kazuhiro, to Fuji Photo Film Co., Ltd. Process for producing a cellulose ester support. 4,499,043, Cl. 264-207.000.
Yabuno, Kohei: *See—*
Onda, Kenichi; Abe, Kojin; Yabuno, Kohei; and Uemura, Takeshi, 4,499,530, Cl. 363-17.000.
Yamada, Takeshiro: *See—*
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.
Yamada, Tetsuyo; and Nakayama, Yutaka, to NGK Spark Plug Co., Ltd. Oxygen sensor. 4,498,968, Cl. 204-412.000.
Yamada, Yasuhiro; and Mori, Takaro, to Victor Company of Japan, Ltd. Data reproducing apparatus for reproducing digital data recorded on multi-tracks. 4,499,507, Cl. 360-26.000.
Yamaguchi, Katsuhiko: *See—*
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; and Tanaka, Munekazu, 4,499,252, Cl. 528-38.000.

Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, to Fuji Photo Film Co., Ltd. Method of preparing a magnetic recording medium with a calendering treatment. 4,499,121, Cl. 427-130.000.

Yamaguchi, Sadaatsu: *See*—
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Watanabe, Eifu, 4,498,875, Cl. 440-88.000.

Yamakage, Tetsuro: *See*—
Nomura, Kenji; Yamakage, Tetsuro; and Noro, Katsuyoshi, 4,498,571, Cl. 198-339.000.

Yamamichi, Masayoshi: *See*—
Suzuki, Masayuki; Yamamichi, Masayoshi; and Ohara, Tsunemasa, 4,498,750, Cl. 354-154.000.

Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, to Olympus Optical Co., Ltd. Disc drive apparatus. 4,499,514, Cl. 360-97.000.

Yamamiya, Kunio: *See*—
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.

Yamamori, Naoki; Yokoi, Junji; and Yoshikawa, Motoyoshi, to Nippon Paint Co., Ltd. Hydrolyzable polyester resins and coating compositions containing the same. 4,499,223, Cl. 524-176.000.

Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikuro, to Toyoda Koki Kabushiki Kaisha. Numerical controller for a grinding machine. 4,498,259, Cl. 51-165.710.

Yamamoto Kogaku Co., Ltd.: *See*—
Yamamoto, Tamenobu, 4,498,202, Cl. 2-424.000.

Yamamoto, Kuniyuki: *See*—
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,498,553, Cl. 180-230.000.

Yamamoto, Nobuyuki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,499,138, Cl. 428-216.000.

Yamamoto, Shigeru; Miyake, Yuzuru; and Nohara, Isao, to Teijin Seiki Company, Limited. Method of winding yarn on bobbin. 4,498,637, Cl. 242-18.100.

Yamamoto, Tamenobu, to Yamamoto Kogaku Co., Ltd. Helmet equipped with ventilator. 4,498,202, Cl. 2-424.000.

Yamamoto, Tomio: *See*—
Yasue, Setsuo; and Yamamoto, Tomio, 4,498,835, Cl. 414-463.000.

Yamanaka, Hideaki: *See*—
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,499,088, Cl. 514-202.000.

Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Electrode composition for vacuum switch. 4,499,009, Cl. 252-512.000.

Yamashita, Kiyotoshi: *See*—
Ota, Hideo; and Yamashita, Kiyotoshi, 4,499,179, Cl. 430-523.000.

Yamato, Akihiro: *See*—
Hasegawa, Shumpei; and Yamato, Akihiro, 4,498,443, Cl. 123-478.000.

Yamauchi, Hidetoshi: *See*—
Enomoto, Ryo; Yamauchi, Hidetoshi; and Tanikawa, Shoji, 4,499,147, Cl. 428-428.000.

Yamauchi, Junichi: *See*—
Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, 4,499,251, Cl. 526-278.000.

Yamazaki, Shinji: *See*—
Shinozaki, Nozomu; Dohi, Takashi; Yamazaki, Shinji; and Neki, Shigeo, 4,499,449, Cl. 338-32.00R.

Yamazaki, Tsuneo; Faltas, Mervat; and Webb, Paul P., to RCA, Inc. Silicon photodiode with n-type control layer. 4,499,483, Cl. 357-30.000.

Yanagi, Toshiaki; and Bessho, Yoshinori, to Brother Kogyo Kabushiki Kaisha. Programming device for an automatic sewing machine. 4,498,403, Cl. 112-121.120.

Yanagida, Tomomi; Ajiki, Mitunori; and Suzuki, Shigeru, to Sumitomo Bakelite Company Limited. Metal-clad laminate and process for producing the same. 4,499,145, Cl. 428-418.000.

Yanagishima, Takayuki: *See*—
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,499,340, Cl. 179-115.5DV.

Yano, Yasuhiro: *See*—
Takatori, Yasushi; Yano, Yasuhiro; and Hattori, Yoshifumi, 4,499,480, Cl. 346-140.00R.

Yao, Raymond C.: *See*—
Lee, May D.; Martin, John H.; Borders, Donald B.; Yao, Raymond C.; and Testa, Raymond T., 4,499,075, Cl. 424-118.000.

Yasue, Setsuo; and Yamamoto, Tomio, to Sanko Kiki Kabushiki Kaisha. Stopping device in spare wheel holding apparatus. 4,498,835, Cl. 414-463.000.

Yasui, Yoshiharu: *See*—
Suzuki, Yoshihisa; Yasui, Yoshiharu; and Takasu, Shigeru, 4,498,216, Cl. 19-244.000.

Yen, Kuo-Hsiung: *See*—
Stokes, Robert B.; Yen, Kuo-Hsiung; Lau, Kei-Fung; Kagiwada, Reynold S.; and Delaney, Michael J., 4,499,393, Cl. 310-313.00A.

Yeung, Edward E.; Steenhoek, Larry E.; Woodruff, Steven D.; and Kuo, Jeng-Chung, to Iowa State University Research Foundation, Inc. Micro-polarimeter for high performance liquid chromatography. 4,498,774, Cl. 356-368.000.

Yokoi, Junji: *See*—
Yamamori, Naoki; Yokoi, Junji; and Yoshikawa, Motoyoshi, 4,499,223, Cl. 524-176.000.

Yokota, Hajime: *See*—
Yoshida, Masashi; Katohno, Noboru; Yokota, Hajime; and Okayama, Masao, 4,499,512, Cl. 360-90.000.

Yokota, Tsuneshi, to Tokyo Shibaura Denki Kabushiki. Optical disk system with laser safety arrangement. 4,499,571, Cl. 369-54.000.

Yorita, Mitsumasa: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.

Yoshida, Hitoshi; Atsumi, Morihiro; Ito, Nobuei; and Atsumi, Kinya, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Ceramic heater device. 4,499,366, Cl. 219-270.000.

Yoshida, Keiichiro. Method of and apparatus for forming long metal tubing stock to tapered shape. 4,498,321, Cl. 72-76.000.

Yoshida Kogyo K. K.: *See*—
Matsuda, Yoshio, 4,498,316, Cl. 66-196.000.
Ofusa, Masaatsu, 4,498,503, Cl. 139-116.000.
Tsubata, Noritaka, 4,498,502, Cl. 139-35.000.

Yoshida, Masashi; Katohno, Noboru; Yokota, Hajime; and Okayama, Masao, to Hitachi, Ltd. Reel drive system of magnetic recording and reproducing apparatus. 4,499,512, Cl. 360-90.000.

Yoshida, Susumu: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,499,541, Cl. 364-424.000.

Yoshihara, Kenji: *See*—
Sugiyama, Hiroyuki; Abe, Ryozo; and Yoshihara, Kenji, 4,499,505, Cl. 358-342.000.

Yoshihara, Tetsuya, to Nippon Kokan Kabushiki Kaisha; Nippon Rotary Nozzle Co., Ltd.; Kokan Kikai Kogyo Kabushiki Kaisha; and Tokyo Yogyo Kabushiki Kaisha. Dual door type rotary nozzle. 4,498,611, Cl. 222-599.000.

Yoshihiro, Naotsugu: *See*—
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.

Yoshikawa, Motoyoshi: *See*—
Yamamori, Naoki; Yokoi, Junji; and Yoshikawa, Motoyoshi, 4,499,223, Cl. 524-176.000.

Yoshikawa, Shoji: *See*—
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.

Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, to Olympus Optical Co., Ltd. Method for reading information or defect out of rotating disc. 4,499,572, Cl. 369-111.000.

Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, to Asahi-Dow Limited. Composition for cold drawn film. 4,499,241, Cl. 525-211.000.

Yoshimura, Masaru; and Saitoh, Sumio, to Catalysts & Chemicals Industries, Co. Ltd. Thermo-setting resinous liquid compositions. 4,499,217, Cl. 523-456.000.

Young, Robert F.: *See*—
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,498,871, Cl. 440-61.000.

Young, Roy E.; Stricklin, Douglas K.; and Givens, Henry M. W. Highly maneuverable prime mover. 4,498,554, Cl. 180-236.000.

Yuki, Etsuji. Adsorbing deacidifier for oily substances. 4,499,196, Cl. 502-64.000.

Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho. Input circuit of a fork lift truck control system for a fork lift truck. 4,499,541, Cl. 364-424.000.

Zacharides, Anagnostis E.: *See*—
Economy, James; and Zacharides, Anagnostis E., 4,499,122, Cl. 427-130.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,499,083, Cl. 514-36.000.

Zalewski, Gerald F., to White Consolidated Industries, Inc. Soot blower. 4,498,213, Cl. 15-316.00R.

Zampino, Michael J.: *See*—
Luccarelli, Domenick, Jr.; Mookherjee, Braja D.; Wilson, Richard A.; Zampino, Michael J.; and Bowen, David R., 4,499,114, Cl. 426-534.000.

Zee-Cheng, Robert K.: *See*—
Cheng, Chia C.; and Zee-Cheng, Robert K., 4,499,266, Cl. 544-126.000.

Zembayashi, Michio: *See*—
Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, 4,499,234, Cl. 524-783.000.

Zemlicka, Alvin R., to Brunswick Corporation. Water shutter. 4,498,876, Cl. 440-89.000.

Zenith Electronics Corporation: *See*—
Strammello, Peter, 4,499,495, Cl. 358-188.000.

Zils, James A.: *See*—
Pamer, Walter R.; Zils, James A.; and Capuano, Terry D., 4,498,825, Cl. 411-11.000.

Zimmer, Herbert: *See*—
Proksch, Hans-Jorg; Welte, Dieter; Zimmer, Herbert; and Lotz, Michael, deceased, 4,498,646, Cl. 244-35.00R.

Zimmermann, Abraham, to Varco International, Inc. Drill rig hook. 4,498,698, Cl. 294-82.00R.

Zinniger, Theodore C.: *See*—
Takeda, Susumu; Mann, Allen W.; Goodrich, David G.; and Zinniger, Theodore C., 4,498,521, Cl. 164-453.000.
Zlafop pri Ban: *See*—
Konstantinov, Ivan T.; Mednikarov, Borislav D.; Sahatchieva, Maria A.; and Burov, Atanas T., 4,499,173, Cl. 430-278.000.
Zoecon Corporation: *See*—
Kohn, Gustave K.; and Bamberg, Joe T., 4,499,271, Cl. 546-22.000.
Zondler, Helmut: *See*—
Lohse, Friedrich; and Zondler, Helmut, 4,499,268, Cl. 544-196.000.
Zoor, Reinhold, to Heinrich Wunder GmbH & Co. KG. Ski binding. 4,498,685, Cl. 280-605.000.
Zucker, Larry R.: *See*—
Pearson, Kenneth A.; and Zucker, Larry R., 4,499,460, Cl. 340-771.000.
Zuege, Kevin C.: *See*—
Shea, Yale R.; and Zuege, Kevin C., 4,499,332, Cl. 174-48.000.
Zupon, Michael A.: *See*—
Sequeira, Joel A.; and Zupon, Michael A., 4,499,108, Cl. 514-653.000.
Zwaskis, William J.: *See*—
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,498,476, Cl. 128-346.000.
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., to National Starch and Chemical Corporation. Imitation cheese products containing modified starch as partial caseinate replacement and method of preparation. 4,499,116, Cl. 426-582.000.
501 Gateway Technology, Inc.: *See*—
Bray, William E., 4,499,531, Cl. 363-19.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF FEBRUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Apontoweil, Peter; and Krasselt, Manfred M., to Gist-Brocades N.V
Infectious bronchitis vaccine for poultry. Re. 31,830, Cl. 424-89.000.

Gist-Brocades N.V.: *See*—
Apontoweil, Peter; and Krasselt, Manfred M., Re. 31,830, Cl. 424-89.000.

Krasselt, Manfred M.: *See*—
Apontoweil, Peter; and Krasselt, Manfred M., Re. 31,830, Cl. 424-89.000.

Rhone-Poulenc Agrochimie: *See*—
Theissen, Robert J., Re. 31,831, Cl. 560-021.000.

Samulski, Thaddeus V. Temperature probe. Re. 31,832, Cl. 374-131.000.

Stearn, Leathem S. Two groove headstay. Re. 31,829, Cl. 114-105.000.

Theissen, Robert J., to Rhone-Poulenc Agrochimie. Substituted phenoxybenzoic acids and esters thereof. Re. 31,831, Cl. 560-021.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
D'Alo, Herbert F.; and Case, Robert, 277,603, Cl. D24-8.000.

Aktiebolaget Bofors: *See*—
Wik, Torsten; Lagerstam, Christer; Pettersson, Kurt; and Mattsson, Kjell, 277,597, Cl. D22-10.000.

Altena Salotti S.n.c.: *See*—
Giudici, Gianbattista, 277,527, Cl. D6-379.000.

Annestedt, James W. Sign support stand. 277,584, 2-12-85, Cl. D20-43.000.

Arginsky, Richard C., to Master Juvenile Products. Spray hoop. 277,610, 2-12-85, Cl. D23-6.000.

Arnold, Don C.; and Wilcox, Thomas J., to Indiana Brass, Inc. Vacuum breaker assembly for bidet. 277,599, 2-12-85, Cl. D23-69.000.

Assouline, Maurice: *See*—
Merl, Milton J.; and Assouline, Maurice, 277,537, Cl. D7-301.000.

AT&T Bell Laboratories: *See*—
Genaro, Donald M.; Hall, Norris R.; McGarvey, John N.; and Skubiak, Michael T., 277,570, Cl. D14-59.000.

AT&T Technologies, Inc.: *See*—
Cooke, Kenneth R.; and Porcelli, Vito L., 277,571, Cl. D14-60.000.
McGarvey, John N.; and Tilley, Alvin R., 277,573, Cl. D14-53.000.

Baer, Albert, to Imperial Knife Associated Companies, Inc. Knife handle. 277,536, 2-12-85, Cl. D7-152.000.

Benson, James A.; and Jones, Paul W., to Physio-Control Corporation. Fluid dispensing pump. 277,602, 2-12-85, Cl. D24-8.000.

Boeing Company, The: *See*—
White, Thomas H., 277,526, Cl. D6-356.000.

Bondwell Electronics Ltd.: *See*—
Lee, Ping M., 277,574, Cl. D14-64.000.

Bridgestone Tire Company, Ltd.: *See*—
Kawajiri, Junichi; Hayakawa, Toshio; and Nishio, Hideaki, 277,562, Cl. D12-149.000.

Brown-Forman Distillers Corporation: *See*—
Kerr, Jayne K., 277,551, Cl. D9-367.000.

Buhk, Randall P.; Hozeski, Kenneth W.; and Karrip, Alex, to Steelcase Inc. Chair. 277,525, 2-12-85, Cl. D6-366.000.

Campbell, Paul R.; Dilgard, Robert E., Jr.; and O'Neil, William J., Jr., to Procter & Gamble Company, The. Jar. 277,550, 2-12-85, Cl. D9-349.000.

Carbajales Santa-Eulalia, Javier B.: *See*—
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 277,560, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a spaniel dog. 277,560, 2-12-85, Cl. D11-158.000.

Case, Robert: *See*—
D'Alo, Herbert F.; and Case, Robert, 277,603, Cl. D24-8.000.

Cebula, Jerome J. Glass eye for taxidermy. 277,606, 2-12-85, Cl. D24-33.000.

Chabot, Jean-Marie, to Les Industries Provinciales Ltee. Bottle carrier. 277,554, 2-12-85, Cl. D9-434.000.

Channel-Kor Systems Inc.: *See*—
Miller, Melvin M., 277,533, Cl. D6-470.000.

Charlestein, Morton: *See*—
Werrin, Samuel R., 277,605, Cl. D24-16.000.

Ciba-Geigy AG.: *See*—
Kung, Eduard R., 277,552, Cl. D9-376.000.

Colgate-Palmolive Company: *See*—
Sanabria, Jose A., 277,611, Cl. D28-8.100.

Comus, Inc.: *See*—
Pappas, Chris J., 277,556, Cl. D10-2.000.

Conair Corporation: *See*—
Rittenhouse, James M., 277,613, Cl. D28-13.000.

Cooke, Kenneth R.; and Porcelli, Vito L., to AT&T Technologies, Inc. Telephone instrument base. 277,571, 2-12-85, Cl. D14-60.000.

Cotton, James D.: *See*—
Ito, John M.; and Cotton, James D., 277,553, Cl. D9-416.000.

D'Alo, Herbert F.; and Case, Robert, to Abbott Laboratories. I.V. flow control apparatus. 277,603, 2-12-85, Cl. D24-8.000.

Daugherty, Valerie, to Questor Corp. Toy saw. 277,589, 2-12-85, Cl. D21-120.000.

DeCarolis, Joseph P., to Stanley Works, The. Mitre box with corner clamps. 277,544, 2-12-85, Cl. D8-71.000.

Deimen, Michael L. Building block. 277,609, 2-12-85, Cl. D25-80.000.

Dilgard, Robert E., Jr.: *See*—
Campbell, Paul R.; Dilgard, Robert E., Jr.; and O'Neil, William J., Jr., 277,550, Cl. D9-349.000.

Diversified Products Corporation: *See*—
Silberman, Ira J., 277,519, Cl. D2-27.000.

Duhamel, Jean-Pierre. Mobile display counter. 277,532, 2-12-85, Cl. D34-17.000.

Dunbar, Keith E.: *See*—
Newmeyer, F. Craig; and Dunbar, Keith E., 277,545, Cl. D8-76.000.

Eastman Kodak Company: *See*—
McClare, Andrew V., 277,582, Cl. D16-5.000.

Ekbladh, Fred V. G.; and Tillander, Hans. Trocar. 277,608, 2-12-85, Cl. D24-51.000.

Elkerbout, Marten F., to U.S. Philips Corporation. Coffee maker. 277,539, 2-12-85, Cl. D7-309.000.

Erfurth, Ronald. Wheeled walker. 277,561, 2-12-85, Cl. D12-130.000.

Esaki, Akira: *See*—
Hazama, Shigetoshi; Sawa, Shuzo; Ikeda, Matafumi; and Esaki, Akira, 277,600, Cl. D23-123.000.

Espinda, Henry M. Charcoal barbecue grill. 277,541, 2-12-85, Cl. D13-3.000.

Etablissments Fernand Berchet: *See*—
Rivollet, Marc, 277,591, Cl. D21-130.000.

Feltman, Charles H.: *See*—
Langer, Dick G.; and Feltman, Charles H., 277,535, Cl. D7-9.000.

Freeman, Dannial R. Precooler for air conditioning unit. 277,601, 2-12-85, Cl. D23-139.000.

Frezel, Jerrold: *See*—
Werrin, Samuel R., 277,605, Cl. D24-16.000.

Genaro, Donald M.; Hall, Norris R.; McGarvey, John N.; and Skubiak, Michael T., to AT&T Bell Laboratories. Adjunct key to a telephone set or similar article. 277,570, 2-12-85, Cl. D14-59.000.

Georgopulos, Thomas, to GTE Automatic Electric Inc. Housing for a busy lamp display unit. 277,569, 2-12-85, Cl. D14-59.000.

Giudici, Gianbattista, to Altena Salotti S.n.c. Seat. 277,527, 2-12-85, Cl. D6-379.000.

Gnecchi and Company S.P.A.: *See*—
Offredi, Giovanni, 277,572, Cl. D14-61.000.

Goshi Kaisha Kanemitsu Doko Yosetsu-Sho: *See*—
Kanemitsu, Yukio, 277,547, Cl. D8-360.000.

Gregory, John R. Face guard. 277,520, 2-12-85, Cl. D2-233.000.

GTE Automatic Electric Inc.: *See*—
Georgopulos, Thomas, 277,569, Cl. D14-59.000.

Hakoda, Kouzou, to Ryobi Limited. Cutter. 277,581, 2-12-85, Cl. D15-125.000.

Hall, Norris R.: *See*—
Genaro, Donald M.; Hall, Norris R.; McGarvey, John N.; and Skubiak, Michael T., 277,570, Cl. D14-59.000.

Halsnes, Odd. Chain connector. 277,548, 2-12-85, Cl. D8-499.000.

Hamada, Masanori: *See*—
Ohno, Akio; and Hamada, Masanori, 277,564, Cl. D14-5.000.

Hashiba, Takeo: *See*—
Wada, Naoki; Saito, Tomitaro; and Hashiba, Takeo, 277,566, Cl. D14-6.000.
Hayakawa, Toshio: *See*—
Kawajiri, Junichi; Hayakawa, Toshio; and Nishio, Hideaki, 277,562, Cl. D12-149.000.
Hazama, Shigetoshi; Sawa, Shuzo; Ikeda, Matafumi; and Esaki, Akira, to Sharp Corporation. Oil heater. 277,600, 2-12-85, Cl. D23-123.000.
Hewi GmbH: *See*—
Scholl, Winfried, 277,529, Cl. D6-561.000.
Himeno, Shinkichi, to Yugen Kaisha Yushin Kaihatsu. Artificial acetabular cup or similar article. 277,607, 2-12-85, Cl. D24-33.000.
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177 4,498,323
208 4,498,324
302 4,498,325
318 4,498,326
341 4,498,327
482 4,498,328

CLASS 73

9 4,498,329
23 4,498,330
35 4,498,331
40 4,498,332
40.5 A 4,498,333
113 4,498,334
162 4,498,335
168 4,498,336
204 4,498,337
432 R 4,498,338
4,498,339
504 4,498,340
517 B 4,498,342
517 R 4,498,341
663 4,498,343
778 4,498,344
849 4,498,345
861.01 4,498,346
861.66 4,498,347
862.05 4,498,348

CLASS 74

5.2 4,498,349
89.15 4,498,350
439 4,498,351
568 R 4,498,352
606 R 4,498,353
625 4,498,354
650 4,498,355
745 4,498,356
752 F 4,498,357
829 4,498,358
850 4,498,359

CLASS 75

65 ZM 4,498,923
4,498,924
4,498,925
4,498,926
67 R 4,498,927
124 4,498,928

CLASS 76

88 4,498,360
101 R 4,498,361

CLASS 83

304 4,498,362

CLASS 84

1.01 4,498,363
1.17 4,498,364
1.24 4,498,365
304 4,498,366

CLASS 86

1 R 4,498,367

CLASS 89

1.817 4,498,368
198 4,498,369

CLASS 91

171 4,498,370

CLASS 92

2 4,498,371
187 4,498,372

CLASS 98

33.1 4,498,373
94.2 4,498,374

CLASS 99

303 4,498,375
345 4,498,376
450.7 4,498,377
472 4,498,378

CLASS 100

2 4,498,379
98 R 4,498,380
100 4,498,381
117 4,498,382
162 B 4,498,383
224 4,498,384
233 4,498,385

CLASS 101

40 4,498,386
4,498,387
93.04 4,498,388
288 4,498,389
365 4,498,390

CLASS 102

312 4,498,391
342 4,498,392
393 4,498,393
489 4,498,394
517 4,498,395
529 4,498,396

CLASS 104

35 4,498,397
44 4,498,398
96 4,498,399

CLASS 105

248 4,498,400

CLASS 106

38.2 4,498,929
100 4,498,930
307 4,498,931

CLASS 108

60 4,498,401

CLASS 110

345 4,498,402

CLASS 112

121.12 4,498,403
4,498,404
168 4,498,405
256 4,498,406
308 4,498,407

CLASS 114

52 4,498,408
61 4,498,409
91 4,498,410
97 4,498,411
105 Re.31,829
264 4,498,412
345 4,498,413

CLASS 118

663 4,498,414
712 4,498,415
719 4,498,416

CLASS 119

5 4,498,417
10 4,498,418
14.18 4,498,419
15 4,498,420
17 4,498,421
4,498,422
51 R 4,498,423
4,498,424
96 4,498,425

CLASS 122

32 4,498,426
379 4,498,427
448 R 4,498,428

CLASS 123

26 4,498,429
58 R 4,498,430
90.15 4,498,431
90.16 4,498,432
90.38 4,498,433
187.5 R 4,498,434
306 4,498,435
339 4,498,436
373 4,498,437
418 4,498,438
438 4,498,439
4,498,440
440 4,498,441
447 4,498,442
478 4,498,443
4,498,444
489 4,498,445
557 4,498,446
4,498,447

CLASS 124

35 A 4,498,448

CLASS 125

15 4,498,449
16 R 4,498,450
23 R 4,498,451

CLASS 126

9 R 4,498,452
21 A 4,498,453
415 4,498,454
417 4,498,455
425 4,498,456
429 4,498,457
4,498,458
430 4,498,459
440 4,498,460

CLASS 128

1 R 4,498,461
24.1 4,498,462
37 4,498,463
54 4,498,464
79 4,498,465
4,498,466
90 4,498,467
92 B 4,498,468
152 4,498,469
202.26 4,498,470
204.26 4,498,471
205.17 4,498,472
207.15 4,498,473
303.13 4,498,474
303.14 4,498,475
346 4,498,476
378 4,498,477
419 PG 4,498,478
639 4,498,479
644 4,498,480
734 4,498,481
786 4,498,482

CLASS 130

27 T 4,498,483
30 R 4,498,484

CLASS 131

300 4,498,486
331 4,498,485
336 4,498,487
4,498,488

CLASS 132

40 4,498,489
88.5 4,498,490

CLASS 134

8 4,498,932
22.14 4,498,933
254 4,498,934

CLASS 136

208 4,499,329
230 4,499,330
258 4,499,331

CLASS 137

72 4,498,491
315 4,498,492
469 4,498,493
514 4,498,494
557 4,498,495
599 4,498,496
599.1 4,498,497
613 4,498,498
627.5 4,498,499
883 4,498,500

CLASS 139

28 4,498,501
35 4,498,502
116 4,498,503
302 4,498,504

CLASS 140

2 4,498,505
93.2 4,498,506
4,498,507

CLASS 141

5 4,498,508
10 4,498,509
27 4,498,510
85 4,498,511

CLASS 144

2 R 4,498,512

CLASS 145

11 4,498,513

CLASS 148

6.15 R 4,498,936
6.15 Z 4,498,935
171 4,498,937

CLASS 152

356 R 4,498,514
417 4,498,515

CLASS 156

49 4,498,938
66 4,498,939
98 4,498,940
148 4,498,941
151 4,498,942
164 4,498,943
205 4,498,944
256 4,498,945
324 4,498,946
384 4,498,947
401 4,498,948
462 4,498,949
577 4,498,950
612 4,498,951
643 4,498,952
646 4,498,953
651 4,498,954

CLASS 157

1.1 4,498,516

CLASS 160

294 4,498,517

CLASS 162

30.11 4,498,955
101 4,498,956
146 4,498,957

CLASS 164

416 4,498,518
417 4,498,519
426 4,498,520
453 4,498,521
460 4,498,522
477 4,498,523

CLASS 165

36 4,498,524
39 4,498,525
42 4,498,528
45 4,498,526
89 4,498,527
176 4,498,529
185 4,498,530

CLASS 166

59 4,498,531
70 4,498,532
117.5 4,498,533
208 4,498,534
248 4,498,535
250 4,498,536
257 4,498,537
294 4,498,539
295 4,498,538
4,498,540
297 4,498,541

303 4,498,542
376 4,498,543

CLASS 173

1 4,498,544
43 4,498,545

CLASS 174

35 R 4,498,546
48 4,499,332
52 FP 4,499,333
111 4,499,334

CLASS 175

244 4,498,547
299 4,498,548
329 4,498,549

CLASS 177

209 4,498,550

CLASS 179

6.03 4,499,335
18 ES 4,499,336
2. D 4,499,337
99 E 4,499,338
107 FD 4,499,339
115.5 DV 4,499,340

CLASS 180

65.5 4,498,551
70.1 4,498,552
230 4,498,553
236 4,498,554

CLASS 181

129 4,498,555

CLASS 182

19 4,498,556
49 4,498,557

CLASS 184

15.1 4,498,558

CLASS 188

1.11 4,498,559
4,498,560
36 4,498,561
58 4,498,562
65.1 4,498,563
73.32 4,498,564

CLASS 191

12.4 4,499,341

CLASS 192

98 4,498,565
4,498,566
133 4,498,567

CLASS 193

10 4,498,568
27 4,498,569

CLASS 194

1 N 4,498,570

CLASS 196

46 4,498,958

CLASS 198

339 4,498,571
345 4,498,572
374 4,498,573
380 4,498,574
400 4,498,575
426 4,498,576
499 4,498,577
680 4,498,578

CLASS 200

5 A 4,499,343
5 E 4,499,342
50 C 4,499,344
67 D 4,499,346
67 F 4,499,345
81.9 M 4,499,347
84 C 4,499,348
144 AP 4,499,350
144 B 4,499,349
148 R 4,499,351
296 4,499,352

CLASS 202

185.2 A 4,498,959

CLASS 204

1 T 4,498,960
98 4,498,961
129 4,498,962
159.19 4,498,963
159.23 4,498,964
228 4,498,965
243 R 4,498,966
272 4,498,967
298 4,498,969
412 4,498,968
415 4,498,970

CLASS 206

315.4 4,498,579
418 4,498,580
427 4,498,581
4,498,582
444 4,498,583
470 4,499,353
510 4,498,584
518 4,498,585
525 4,498,586
4,498,587
526 4,498,588
4,498,589
581 4,498,590
620 4,498,591

CLASS 208

11 LE 4,498,971
59 4,498,972
63 4,498,973
96 4,498,974
114 4,498,975
120 4,498,976
207 4,498,977
4,498,978
216 R 4,498,979
321 4,498,980

CLASS 209

243 4,498,981

CLASS 210

96.2 4,498,982
97 4,498,983
122 4,498,984
151 4,498,985
199 4,498,986
222 4,498,987
397 4,498,988
450 4,498,989
637 4,498,990
659 4,498,991
664 4,498,992
710 4,498,993

CLASS 211

42 4,498,592
49 D 4,498,593
181 4,498,594
194 4,498,595

CLASS 212

189 4,498,596

CLASS 215

329 4,498,597

CLASS 219

10.49 R 4,499,354
4,499,355
10.55 B 4,499,357
10.55 E 4,499,356
10.77 4,499,358
69 W 4,499,359
85 H 4,499,360
121 LA 4,499,362
121 LK 4,499,361
130.21 4,499,363
161 4,499,364
205 4,499,365
270 4,499,366
421 4,499,367
452 4,499,368
552 4,499,369

CLASS 220

6 4,498,598
203 4,498,599
255 4,498,600
256 4,498,601
452 4,498,602

CLASS 221

76 4,498,603

CLASS 222

5 4,498,604
4,498,605
52 4,498,606
146.6 4,498,607
190 4,498,608
420 4,498,609
592 4,498,610
599 4,498,611

CLASS 224

163 4,498,612
251 4,498,613
273 4,498,614
274 4,498,615

CLASS 225

1 4,498,616

CLASS 228

119 4,498,617

CLASS 229

40 4,498,618
52 A 4,498,620
52 B 4,498,619

CLASS 232

35 4,498,621

CLASS 235

144 HC 4,499,370
492 4,499,371

CLASS 236

25 R 4,498,622

CLASS 237

8 R 4,498,623
53 4,498,624

CLASS 239

5 4,498,625
230 4,498,626
279 4,498,627
381 4,498,628
434.5 4,498,629
677 4,498,630
692 4,498,631

CLASS 241

18 4,498,632
48 4,498,633
72 4,498,634
94 4,498,635

CLASS 242

1.1 R 4,498,636
18.1 4,498,637
45 4,498,638
47.01 4,498,639
67.1 R 4,498,640
106 4,498,641
107.4 A 4,498,642
107.4 D 4,498,643
131.1 4,498,644

CLASS 244

12.6 4,498,645
35 R 4,498,646
75 R 4,498,647
118.3 4,498,648
118.6 4,498,649

CLASS 246

122 R 4,498,650

CLASS 248

65 4,498,651
99 4,498,652
225.2 4,498,653
251 4,498,654
467 4,498,655
608 4,498,656
623 4,498,657

CLASS 250

223 R 4,499,372
231 P 4,499,373
237 G 4,499,374
252.1 4,499,375
341 4,499,376
343 4,499,377
4,499,378
4,499,379
390 4,499,380
483.1 4,499,381
493.1 4,499,382
561 4,499,383
578 4,499,384

CLASS 251

149.6 4,498,658

CLASS 252

8.5 LC 4,498,995
8.5 M 4,498,994
8.55 C 4,498,997
8.6 4,498,996
52 R 4,498,998
67 4,498,999
73 4,499,000
99 4,499,001
180 4,499,002
192 4,499,003
299.1 4,499,004
301.6 S 4,499,005
392 4,499,006
500 4,499,007
4,499,008
512 4,499,009
4,499,010
518 4,499,011
522 A 4,499,012
567 4,499,013

CLASS 254

134.4 4,498,659

CLASS 256

19 4,498,660

CLASS 260

112 R 4,499,014
239 A 4,499,016
245.2 R 4,499,017
245.81 4,499,018
397.1 4,499,020
4,499,021
429.7 4,499,022
453 R 4,499,024
453 SP 4,499,023
465 R 4,499,025
4,499,026
502.5 G 4,499,027
513 R 4,499,028
544 A 4,499,029

CLASS 261

3 4,499,030
66 4,499,031
72 R 4,499,032
94 4,499,033
109 4,499,034
114 JP 4,499,035

CLASS 264

26 4,499,036
37 4,499,037
51 4,499,038
137 4,499,039
167 4,499,040
173 4,499,041
205 4,499,042
207 4,499,043
521 4,499,044
532 4,499,045

CLASS 266

239 4,498,661

CLASS 269

101 4,498,662

CLASS 270

54 4,498,663

CLASS 271

204 4,498,664
289 4,498,665

CLASS 272

5 4,498,666

CLASS 273

60 B 4,498,667
73 R 4,498,668
84 R 4,498,669
129 V 4,498,670
144 B 4,498,671
169 4,498,672
172 4,498,673
243 4,498,674
249 4,498,675
336 4,498,676
380 4,498,677

CLASS 277

3 4,498,678
92 4,498,679
112 4,498,680
215 4,498,681

CLASS 279

1 K 4,498,682

CLASS 280

7.12 4,498,688
16 4,498,683
234 4,498,684
605 4,498,685
610 4,498,686
615 4,498,687
803 4,498,689
804 4,498,690

CLASS 285

12 4,498,691
20 4,498,692
137 R 4,498,693

CLASS 292

260 4,498,695
337 4,498,694

CLASS 293

126 4,498,696
128 4,498,697

CLASS 294

82 R 4,498,698
101 4,498,699

CLASS 296

78.1 4,498,700
216 4,498,701

CLASS 297

312 4,498,702
328 4,498,703
397 4,498,704

CLASS 299

4 4,498,705
5 4,498,706
81 4,498,707

CLASS 300

2 4,498,708

CLASS 301

5 VH 4,498,709

CLASS 303

6 R 4,498,710
13 4,498,711
23 R 4,498,712

CLASS 307

10 R 4,499,385
260 4,499,386
443 4,499,387
474 4,499,388

CLASS 310

41 4,499,389
88 4,499,390
89 4,499,391
178 4,499,392
313 A 4,499,393
330 4,499,394
361 4,499,395

CLASS 312

214 4,498,713
312 4,498,714

CLASS 313

25 4,499,396
112 4,499,397
113 4,499,398
143 4,499,399
265 4,499,400
315 4,499,401
414 4,499,402
487 4,499,403
579 4,499,404

CLASS 315

13.1 4,499,405
57 4,499,406

CLASS 318

254 4,499,407
4,499,408
383 4,499,409
444 4,499,410
592 4,499,412
802 4,499,413
803 4,499,414

CLASS 320

5 4,499,415

CLASS 323

303 4,499,416

CLASS 324

52 4,499,417
58.5 A 4,499,418
102 4,499,419
174 4,499,420
339 4,499,421
4,499,422
4,499,423
425 4,499,424
427 4,499,424

CLASS 329

50 4,499,425
4,499,426
107 4,499,427

CLASS 330

10 4,499,428
254 4,499,429
279 4,499,430
296 4,499,431
4,499,432

CLASS 331

3 4,499,433
17 4,499,434
44 4,499,435
116 M 4,499,436

CLASS 332

7.51 4,499,437

CLASS 333

1 4,499,438
142 4,499,439
151 4,499,440
161 4,499,441

CLASS 335

79 4,499,442
216 4,499,443
284 4,499,444

CLASS 337

30 4,499,446
266 4,499,447
370 4,499,448

CLASS 338

32 R 4,499,449

CLASS 339

14 R 4,498,715
17 LM 4,498,717
17 R 4,498,716
59 M 4,498,718
60 R 4,498,719
75 MP 4,498,720
4,498,721
4,498,722
97 P 4,498,723
97 R 4,498,724
176 M 4,498,725
182 R 4,498,726
278 C 4,498,727

CLASS 340

52 R 4,499,450
98 4,499,451
310 A 4,499,452
326 4,499,453
347 DD 4,499,454
531 4,499,455
576 4,499,456
703 4,499,457
713 4,499,458
752 4,499,459
771 4,499,460
825.03 4,499,461
825.31 4,499,462
825.52 4,499,463
825.72 4,499,464
870.37 4,499,465

CLASS 343

7.3 4,499,466
9 R 4,499,467
15 4,499,468
17.7 4,499,469
352 4,499,470
373 4,499,471
374 4,499,472
754 4,499,473
771 4,499,474

CLASS 346

75 4,499,475
76 PH 4,499,476
137 4,499,477
140 R 4,499,478
4,499,479
4,499,480

CLASS 350

1.7 4,498,728
3.66 4,498,740
3.69 4,498,729
96.16 4,498,730
4,498,731
96.20 4,498,732
102 4,498,733
125 4,498,734
138 4,498,735
167 4,498,736
237 4,498,737
357 4,498,739
427 4,498,741
523 4,498,742
637 4,498,738

CLASS 351

45 4,498,743

CLASS 352

89 4,498,744
119 4,498,745
191 4,498,747

CLASS 353

120 4,498,746

CLASS 354

79 4,498,748
4,498,749
154 4,498,750
289.1 4,498,751
301 4,498,752
425 4,498,753
479 4,498,754

CLASS 355

3 DD 4,498,755
4,498,756
3 FU 4,498,757
3 TR 4,498,758
8 4,498,759
15 4,498,760

24 4,498,761
55 4,498,762
4,498,763

CLASS 356

5 4,498,764
43 4,498,765
73 4,498,766
121 4,498,767
141 4,498,768
244 4,498,769
349 4,498,770
351 4,498,771
357 4,498,772
360 4,498,773
368 4,498,774
375 4,498,775
4,498,776
376 4,498,777
4,498,778
384 4,498,779
414 4,498,780
435 4,498,781
436 4,498,782

CLASS 357

22 4,499,481
30 4,499,482
4,499,483
68 4,499,484
74 4,499,485

CLASS 358

37 4,499,486
41 4,499,487
51 4,499,488
75 4,499,489
87 4,499,490
102 4,499,491
107 4,499,492
111 4,499,493
164 4,499,494
188 4,499,495
213 4,499,496
4,499,497
261 4,499,498
263 4,499,499
296 4,499,500
302 4,499,501
310 4,499,502
316 4,499,503
335 4,499,504
342 4,499,505
343 4,499,506

CLASS 360

26 4,499,507
41 4,499,508
72.1 4,499,509
77 4,499,510
78 4,499,511
90 4,499,512
96.3 4,499,513
97 4,499,514
113 4,499,515
128 4,499,516

CLASS 361

24 4,499,517
306 4,499,518
4,499,519
311 4,499,520
321 4,499,521
331 4,499,522
383 4,499,523
404 4,499,524

CLASS 362

157 4,499,525
263 4,499,526
267 4,499,527
275 4,499,528
283 4,499,529

CLASS 363

17 4,499,530
19 4,499,531
21 4,499,532
126 4,499,533
129 4,499,534

CLASS 364

200 4,499,535
4,499,536
4,499,537
4,499,538
4,499,539
4,499,604
414 4,499,540
424 4,499,541
424.1 4,499,542
426 4,499,543
431.04 4,499,544
464 4,499,545
474 4,499,546
571 4,499,547
575 4,499,548
601 4,499,549
606 4,499,550
717 4,499,551
802 4,499,552
900 4,499,553
4,499,554
4,499,555
4,499,556

CLASS 365

163 4,499,557
182 4,499,558
190 4,499,559
228 4,499,560

CLASS 366

132 4,498,783
134 4,498,784
156 4,499,561
264 4,499,562
274 4,498,785
316 4,499,445
336 4,498,786

CLASS 367

49 4,499,565
84 4,499,563
93 4,499,564
165 4,499,566

CLASS 368

10 4,498,787
106 4,498,788

CLASS 369

7 4,499,567
30 4,499,568
45 4,499,569
48 4,499,570
54 4,499,571
111 4,499,572
270 4,499,573
275 4,499,574

CLASS 370

58 4,499,575
60 4,499,576
62 4,499,577
4,499,578

CLASS 371

15 4,499,579
17 4,499,580
20 4,499,581

CLASS 372

93 4,499,582

CLASS 373

161 4,499,583

CLASS 374

131 Re.31,832
164 4,498,789

CLASS 375

58 4,499,584
62 4,499,585
98 4,499,586

CLASS 376

245 4,499,046
434 4,499,047

CLASS 377

18 4,499,587
42 4,499,588
55 4,499,589
60 4,499,590

CLASS 378

062 4,499,591
121 4,499,592

CLASS 381

25 4,499,593
46 4,499,594

CLASS 382

9 4,499,595
37 4,499,596
41 4,499,597
54 4,499,598

CLASS 383

6 4,499,599

CLASS 384

428 4,498,790

CLASS 400

124 4,498,791
214 4,498,792
320 4,498,793
629 4,498,794
637.1 4,498,795

CLASS 401

132 4,498,796
141 4,498,797

CLASS 403

24 4,498,798
140 4,498,799
172 4,498,800
232.1 4,498,801
300 4,498,802

CLASS 404

6 4,498,803
25 4,498,804

CLASS 405

31 4,498,805
34 4,498,806
43 4,498,807
61 4,498,808
92 4,498,809
115 4,498,810
168 4,498,811
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224 4,498,814
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181 4,498,819

CLASS 409

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300 4,498,821

CLASS 410

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216 4,498,847
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268 4,498,853

CLASS 419

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CLASS 420

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540 4,499,051

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68 4,499,053
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299 4,499,056

CLASS 423

8 4,499,057
70 4,499,058
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308 4,498,855
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546 4,499,115
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385.5 4,499,124

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	379	277,527
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	470	277,533
	518	277,528
	561	277,529
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	309	277,538
		277,539
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	349	277,546
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	376	277,552
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	434	277,554
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	106	277,558
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	149	277,562
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	59	277,569
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	91	277,578
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	122	277,590
	130	277,591
	191	277,592
	198	277,593
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	239	277,595
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	22	277,598
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	69	277,599
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4,499,445	4,498,656	4,499,424	4,499,283	4,499,133	4,499,446
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06 : Re.31,832	4,498,801	4,499,521	4,499,259	4,498,588	4,498,867
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